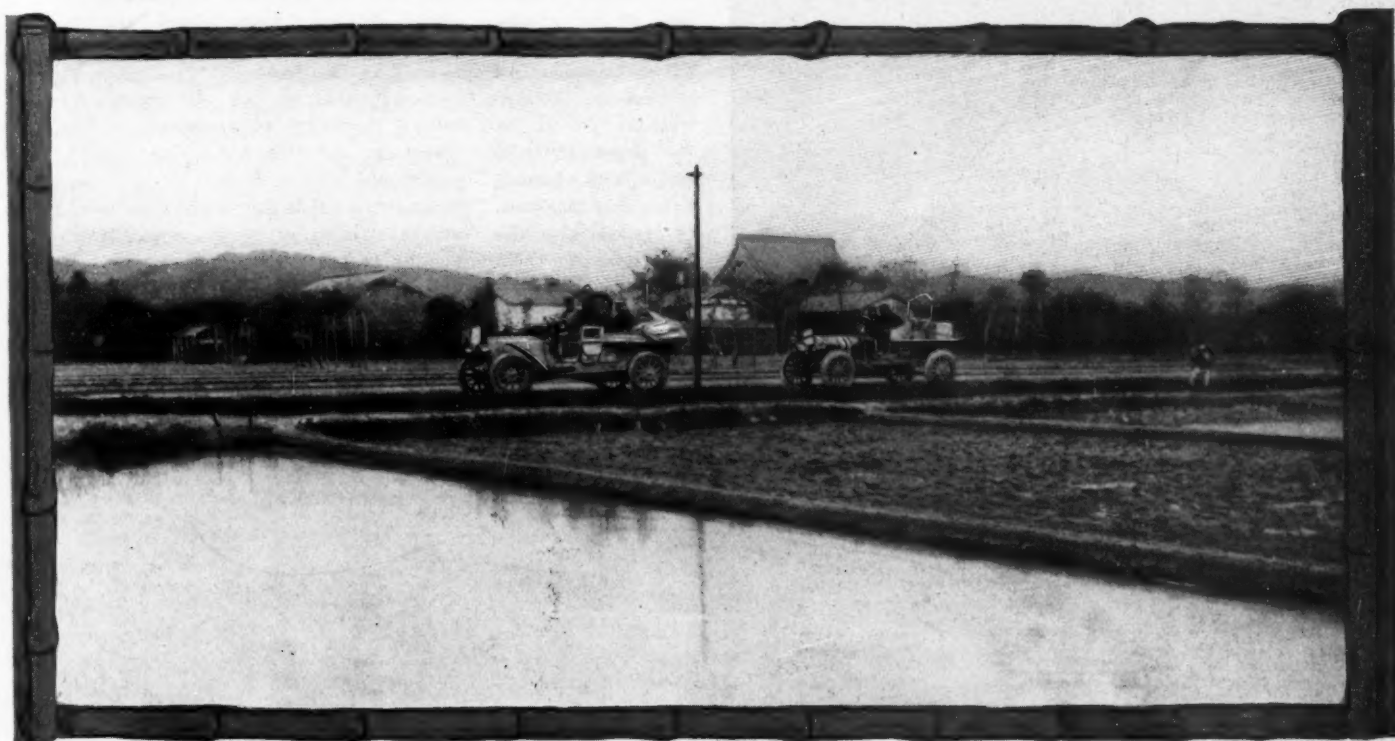


MOTOR AGE

MOTORIKISHAING ACROSS LAND OF MIKADO



TRAVELING THROUGH THE RICE FIELDS IN CENTRAL JAPAN

By EMANUEL LASCARIS

THE motorikisha, as the Japanese called the Thomas, de Dion and Züst cars when crossing the country in the now historic New York-Paris race is a derivative of jinrikisha, the human pull-car of Japan. Jinrikisha is composed of three parts: Jin means man; riki means power; and sha

means wheel or carriage, so that a literal translation becomes man-power-carriage. Applied to motoring it becomes motorikisha. On our trip across Japan—by our I mean the run made by the de Dion and Züst cars, the Thomas having crossed on a shorter route by itself—we were 7 days going 562 miles; one day we traveled but





ONE OF THE BAMBOO ROAD BRIDGES IN JAPAN
RACEES MAKING A TURN ON FUJI MOUNTAIN

4 miles, on other days 26 and on others 175 miles. Traveling in Japan is almost impossible with the motor car—motorikisha—because of the narrow roads. Japan is a country without horses—we only met one horse vehicle in our entire trip across the island, and it upset the load of tea it was pulling because of getting frightened at the exhaust of the Zust car. The vehicles of burden are the jinrikishas pulled by one person with a single seat having room only for one. So small are the majority of them that when crossing the country in them your baggage follows you in a special one. You can rent them for

10 cents an hour, or 75 cents for an entire day. The men or pullers are swarthy brown creations of speed and muscle. They average 5 miles per hour right along, and often with two men hitched tandem the speed is raised to 10 miles per hour. Roads built specially for such vehicles are narrow—too narrow for a motor car. So narrow are the streets in many of the villages that when riding through in the car you can touch the eaves-troughs of the building from the seat, and by standing up it is possible to reach from side to side of some of the streets. The country roads are little better. And the turns are so sharp that you cannot swing the car around a corner as on an American road, but you have to back up and go ahead, getting the car turned inch by inch until after a dozen or more trials it is headed in the desired direction.

You cannot go off the roads, for on either side are water-soaked and often water-covered rice fields, into which the car would sink over the wheels. Besides the narrow roads are the numerous bridges across streams, none of which is strong enough to carry the heavy motor vehicles and the majority of which had to be repaired before the cars could cross them. With difficulties of such a nature it is certain that Japan is not going to become a motorikishaing paradise within the next decade or two unless the road and bridge



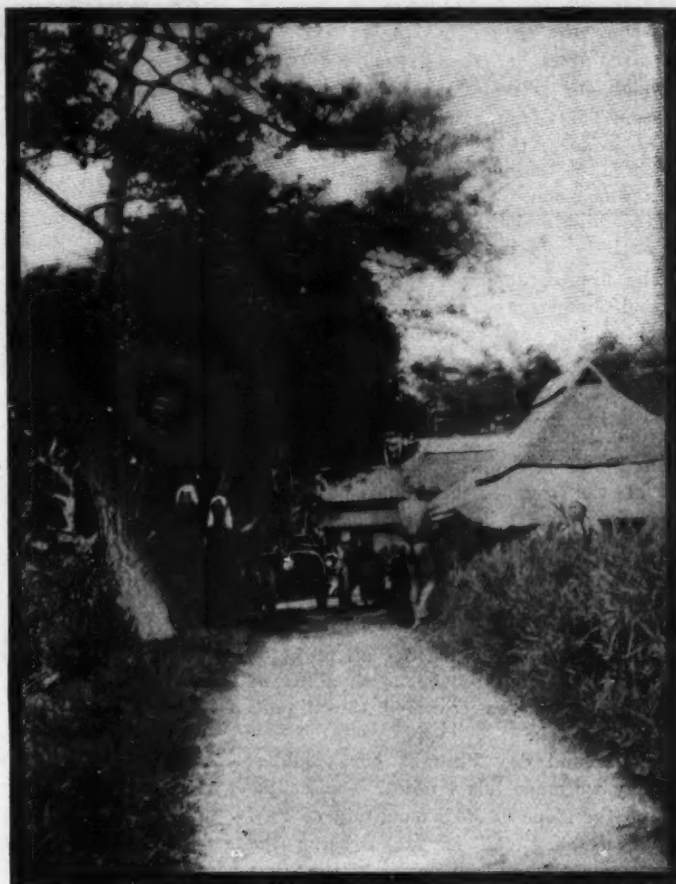
ZIGZAG COURSE DOWN SIDE OF FUJI MOUNTAIN—DE DION CAR IN THE FOREGROUND

commissioners change their tactics greatly. After leaving Seattle on April 13 on a Japanese steamer, Aki Maru, the last word meaning man, and spending 7 days in passage, we sighted Yokahama and landed April 30. On the following day, May 1, we got the cars swung off steamer onto Japanese soil. The same day we made our initial trip over Japanese roads, running to Tokio and return to pay our respects to the French and Italian embassies and get our necessary passports and other credentials for crossing the Mikado's land. On this beautiful road, wide enough for motor cars, we sped along at 50 miles an hour in places, everybody getting out of the way and wanting to see how fast the cars could travel.

From May 2 to 6 were spent in interviewing our ever-present friends, the Standard Oil Co., in the quest of gasoline and oil. We arranged for a sufficient quantity to be shipped by railroad to five points along the tour where we picked it up. During this time a Japanese guide and interpreter, the same used by Charles J. Glidden on his tour through the island, was arranged for on a \$3 a day basis; the necessary passports to get aid of the natives if necessary in repairing or building bridges were obtained and everything was made ready for the start on the morning of May 6.

The start was made early and under

favorable skies. By 9 at night 60 miles was covered and the outskirts of Ttami Hot Springs, a resort of 20,000 population nestling at the foot of the mountains, reached. During the day we had been introduced to some of the narrow roads and sharp turns, but our entry into Atami had additional trouble in store. The European hotel we stayed at overnight is $\frac{1}{4}$ mile from the outskirts of the town, but it took us 2 hours of hard work to make that distance. So narrow are the streets that there was hardly 1 foot space between the hubs of the car and the sides of the buildings. In making one turn it was neces-



NATIVE VILLAGE THROUGH WHICH RACE PASSED



JAPANESE ROADS ARE SO NARROW THAT TURNING CORNERS IS NO EASY TASK

sary to cut the front out of a Japanese house on the corner, which we did with our axes after bargaining with the owner, through our interpreter, as to the recompense. This done the car was run forward a foot, then backed up and this repeated a score of times before the turn was made. The houses are but 7 to 10 feet high and throughout are constructed entirely of bamboo.

The first corner in the town passed, a second danger was encountered. Before reaching the hotel, a winding road along the side of a precipice had to be traveled in which was one hairpin turn. The Zust missed the turn and took another street, with the result that it could not turn around and had to travel on its reverse all of the way to the hotel, which is located somewhat back from the street in the center of a small park protected by a fence with gateway. In making the gateway the Zust tore one of its fenders off and the de Dion suffered equally hard luck. The cars remained out all night on the green in front of the hotel, a tax of 50 cents or 1 yen covering the night's garage of each.

The second day brought our troubles. All day we made but 4 miles. Our course lay up the slope of Fuji mountain or Fuji Maya, as they call it, Maya being the Japanese for mountain. One of the illustrations on page 3 shows the car on this part of the route. The road has fifty-four turns on the up trip and an equal number on the down trip. Fuji Maya is a 12,000-foot extinct volcano and is universally known as the sacred mountain of Japan. Our road but skirted the base. The road is a zigzag from start to finish. Every turn is anywhere from a 15 to 45 degree angle and the road is so narrow that you have to back up, cramp the wheels a little and then go ahead, doing this over a dozen times. This proved ineffectual and several times a dozen coolies were engaged to bodily lift the back end of the car around. Before leaving Yoka-



MAKING A TURN BEFORE TACKLING THE FUJI MOUNTAIN

hama we made arrangements whereby we could press any number of the natives into service on the cent-an-hour scale. In order to do this the government provided us with a large chart some 2 feet long which contained a proclamation to this effect, and unrolling this before the natives was sufficient to cause all of them to bow low and immediately obey.

After having spent an exhausting day on such turns, the first real accident beset us. The de Dion, which was leading, broke through a small culvert, the rear wheel being the offender to such an extent that the axle rested on the bridge. It was almost 9 o'clock at night when this happened, and no towns or villages near. The night was foggy, one of those characteristic Japanese fogs that are thick enough to cut. We attempted to gather wood and make a fire in order to keep warm, but the wood was too green to burn. There

was nothing to do but wrap up in heavy clothing and in raincoats and await the dawn. The two crews, de Dion and Zust, encamped on the side of Fuji Maya.

The next morning everybody was up at 4 o'clock ready to extricate the de Dion. To do this a huge tripod built out of bamboo was built over the car; a block and tackle were pressed into service and the car lifted out of its predicament. It was 9 o'clock, however, before the bridge was repaired and the Zust safely across and ready to continue.

Towards noon the third day a bridge was encountered which had to be repaired before either of the cars could get across. To do this repairing meant a visit to the tollgate man on the end, who is the representative of the bridge commission of Japan, which owns all of the bridges in the country. He would not let us pass without first strengthening, the expense of



RACERS ON THE STREETS OF YOKOHAMA

DEPARTURE OF THE CREWS FROM SEATTLE



ONE OF THE BRIDGES THAT IT WAS NECESSARY TO REBUILD

which we had to bear. He went with our guide to the village and met the head man or mayor, who got forty villagers, all of whom, men and women, set to work to reinforce the bamboo floors and supports. Six hours were so consumed, after which both cars passed over in safety. Lunch was taken at Thizouka and the afternoon run started. But another bridge was ahead, this one too narrow to accommodate all four wheels of the cars. It was necessary to build another bridge along side of it, the old one doing for the right wheels of the cars and the new one for the left wheels. The usual custom of getting a force of villagers at a cent an hour was followed, and soon the new half was ready. The de Dion crossed in safety but weakened the bridge so much that it had to be strengthened before the Züst crossed.

As usual, a 4 o'clock start was made, and for a time the fourth day looked pro-

pitious—but not for long. The experience of previous days had to be repeated. At 3 in the afternoon a poor bridge was encountered 5 miles from Hamamatra, which bridge it was impossible to cross. Both crews worked all afternoon and night making pontoons to ferry the cars across the stream, and the next morning when this was attempted the opposite bank was too steep to pull the cars up and they had to be brought back again and landed. Nothing remained but to retrace steps to a small village, Nakaidjumi, where the cars were loaded on flat cars of the railroad, it taking 4 hours to load them.

The night was spent in Ba-Ba. Both crews were up at 4 and by 8 o'clock that morning 100 miles were made, Otsu on Lake Biwa being reached.

This marked the beginning of the end. From Otsu to Tsuruga on the coast where we set sail for Vladivostok, is 175 miles,

which was made in 23 hours of continuous running, starting at 8 from Otsu on the morning of May 11 and reaching Tsuruga at 7 the morning of May 12. The first part of the trip from Otsu was over good roads but soon the foothills of the Hukusan mountain were reached and here for miles tremendous grades were encountered. One grade which continues for over 2 miles approaches 45 per cent in places. By exact count, forty-eight men and women were needed to drag each car up. Hitched to the front axle were two long ropes purchased in Seattle. The natives ranged themselves in rows along either side of each and before the brakes were off they were tugging the car up, each receiving 30 cents for the 2-mile trip.

This over, the most dangerous part of the entire 562 miles across the country was encountered, being the trip of 25 miles along the coast from Hino to Tsuruga. Those who consult the map will notice the circuitous course to the right that had to be made in order to reach Tsuruga. The coast route is nothing but a shelf on the side of the cliff, and a shelf which winds in tortuous twists with the heights to the left and the water, in some places hundreds of feet below, on the right. There was but one set of lamps or headlights for both cars. The de Dion having these went ahead and assisted the Züst by hanging a lantern over the back of the tonneau. Further assistance was given the Züst by Scarfoglio walking ahead with another lantern in order that the car might avoid roots and stones in the road which would have been sufficient in the darkness to have thrown it over the cliff. Thus was the darkest night of the entire New York-Paris trip spent, the Japanese guide constantly declaring we were all madmen for attempting to make the road even in daylight. But at 7 o'clock we were all safe in Tsuruga, although nearly dead from exhaustion. At 4 that afternoon the cars and crews were started on the 40-hour trip to Vladivostok.



DE DION AFTER IT HAD SMASHED THROUGH BRIDGE

DEPARTURE OF MOTORISTS FROM YOKOHAMA

QUAKERS LAY OUT PARK ROAD RACE COURSE

PHILADELPHIA, Pa., Aug. 24—With the mayor, city councils and James McNichol, the local political boss, all in favor of the scheme, the probability of the proposed 200-mile stock car race in Fairmount park becoming a fixture in the program for the founders' week celebration next October is excellent. The only one who can stop the race—even should he desire to—is Colonel A. Loudon Snowden, chairman of the park commission, who is rusticated in the Maine woods, but who will be in town this week to decide the matter. He will call a special meeting of the commission and act officially in the matter at once.

Meanwhile, so sure are all hands that the necessary permission will be granted that the Quaker City Motor Club, which will manage the affair, already has gone to the expense of selecting and surveying the course. On Thursday last the club collected fourteen cars from members and agents and gave three-score of the local political lights—including Mayor Reyburn, several of his directors and many select and common councilmen—a trip over the 10-mile course. While the outing was an extremely dusty one, all hands were enthusiastic over the prospects for a great race during founders' week.

The mayor, when asked for an opinion concerning the proposed race, said the contest would prove one of the most attractive of the founders' week program. He pointed to the fact that while the course is winding, all the roads are of boulevard width, and there will be ample room to take even the sharpest turns at high speed. There isn't a yard of the course that is less than 60 feet wide, while much of it approximates 100 feet. The lay of the land, too, he said, would enable hundreds of thousands of spectators to safely view the race from the natural grand stands provided by the west bank along the river drive. And as for patrolling the course, there will be at least 10,000 troops in the city during the week, and he thought some arrangement could be made to use them.

Returning from the inspection trip the mayor at once sent a letter to Colonel Snowden strongly indorsing the proposed race. "I am personally interested in this matter," said the mayor in his letter, "and I consider it of sufficient importance to ask you to take the necessary action at once, as 4 weeks' time is none too much in which to complete the necessary details. I suggest you call a special meeting of the park commission at the earliest practicable date to act in the matter."

The course, as decided upon by the committee appointed by the Q. C. M. C. board of governors, is within a few feet of 10 miles in length. The start and finish—where the huge grand stand will be erected—will be on the south concourse, near Memorial hall. This broad road is about a mile in length and the start will be

about midway. A long, easy hairpin turn will carry the racers around the Smith memorial to the north concourse, which parallels the south concourse about 250 yards from the latter. Then comes a $\frac{3}{4}$ -mile straightaway and an easy swing to the right into Belmont avenue, a $\frac{1}{2}$ -mile straightaway to the Lansdowne drive, where a more than right-angle turn will be necessary unless the committee can arrange a temporary cut-off. However, all these roads are more than 60 feet wide, and a wide swing to the left on 100-foot-wide Belmont avenue will enable the racers to take this sharp turn easily. Lansdowne drive is a typical park highway, winding through the prettiest parts of West park, around the lily pond and Horticultural hall, winding in back of Memorial hall—all relics of the centennial exposition of 1876—down steep and tortuous Sweet Briar hill to the West River drive, which follows the windings of the Schuylkill for possibly 4 miles to Neill drive where the climb out of the valley begins. There is another sharp turn on Neill drive, but again the road is so extremely wide as to make its negotiation at speed comparatively easy. Neill drive leads into City Line avenue, which marks the boundary between Philadelphia and Montgomery counties. This avenue is the only narrow bit of the entire course, but only comparatively so, having the usual 20 feet of macadam found on suburban highways. It is a stiff up-grade, however, from the river drive to the crest of the west bank, and the contestant must know the course if he expects to get the best results. The turn into Belmont avenue is less than a right angle and should give no trouble. Then follows the mile dash down Belmont avenue, an easy turn to the right into Constantinople avenue, around back of George's hill to the T. A. B. fountain, where the head of the south concourse is reached, a straightaway to the finish.

Owing to the comparative shortness of the course the entries will be limited to twenty, and cars will be started at $\frac{1}{2}$ -minute intervals. It will be necessary for contestants to cover the course twenty times, and thrills are sure to be numerous in consequence. It will be a comparatively easy and inexpensive matter to telephone the course, which at no point is more than 4 miles from the start.

The A. A. A.-A. C. A. angle was early injected into the race preparations, for the day following the first mention of the contest a rumor was in circulation that the Q. C. M. C. officials were discussing the advisability of running it under the rules of the Automobile Club of America. Messrs. Bartlett and Swain were in New York last week to discover, it was said, under which organization it would be most profitable or expedient to run the race. Questioned on the result of his alleged

visit to the metropolis, Mr. Bartlett was non-committal. "Whatever the Quaker City Motor Club does in the matter will be done with the idea of furnishing the greatest possible amount of entertainment to the hundreds of thousands of visitors to Philadelphia during founders' week," he said to the interviewers.

Sentiment here favors running the race under A. A. A. sanction, as that body has hitherto sanctioned every event held in this city up to date. "It is no longer necessary that there should be a big proportion of foreign cars in a long race in order to insure its success," say the majority of local clubmen. "To throw down the A. A. A. merely to secure a few foreign entries would be poor policy. If the foreigners won't come in, let's have an American car race."

WOMEN FINISH TOUR

Chicago, Aug. 23—A remarkable tour was completed yesterday when Miss Alice Potter, driving a Haynes touring car, reached Chicago after an 8-day run from New York. With Miss Potter were her mother and Miss Dangerfield, and the odometer showed the car had traveled 1,748 miles on the round trip. Miss Potter, who hails from Elgin, started from Chicago some 6 weeks ago with the determination of driving to New York and back without the assistance of man. With her were three young women friends, Miss Elizabeth Forest, Miss Ida Dangerfield and Miss Elizabeth Hunt. New York was reached without incident and the party passed several days in the metropolis. Then the Misses Forest and Hunt returned home by train and Mrs. Potter, aged 75, joined the party for the trip home, which was started August 15. A stop of 1 day was made at Toledo, caused by the temporary indisposition of Mrs. Potter, then the rest of the way was easy. Miss Potter did all the driving and attended to looking after the car herself. Diamond tires were fitted to the Haynes, but on the round trip there were only two punctures, both occurring on the return journey.

BADGERS ON ANOTHER TOUR

Milwaukee, Wis., Aug. 24—The Milwaukee Automobile Club held a successful short tour last Friday and Saturday, the route being from Milwaukee to Manitowoc and return. Eleven cars participated, as follows: Cadillac, James T. Drought, secretary M. A. C.; Peerless, H. H. Rice; Studebaker, Mr. Price; Rambler, Dr. Boerner; Merkel, Christ. Scholtka; Kisselkar, Dr. Louis Fuldner; Dragon, J. E. Farber; Superior, Harry Stratton; Pope-Hartford, Emil Estberg; Welch, E. H. Schwartzburg; Mitchell, Dr. Alfred Kieckhefer. "These short tours are the greatest thing in the world for pacification of farmers," said Secretary Drought. "We

always specify in the touring rules that extreme caution must be used on meeting horse-drawn vehicles, and we have made many friends. Also, the members of the M. A. C. appreciate these opportunities to take a general outing. We were royally entertained all along the route, which took in about 350 miles of the thickly-populated district of southeastern Wisconsin, and all of us enjoyed the trip and would like to go on another one."

RACE FOR GRAND PRIX CARS

London, Aug. 20—Grand prix racers will have an opportunity of showing their ability on the track in a race that has been specially designed for them at Brooklands, Saturday, October 3. The general conditions as regards engine sizes, weights, replenishments, tire changes and colors are the same as those for the French 1908 grand prix. The distance will be about 100 kilometers. Eight cars of non-British origin must be entered or the executive committee will have the right to declare the race void. The sporting commission of the French club has been invited to appoint three stewards to adjudicate on the race in conjunction with the British representatives, and the club of each country having made an entry is invited to appoint a representative. Entries close on September 25, the fee being \$200 per car, of which sum \$160 will be returned if the car starts.

ZUST CAR IN MOSCOW

New York, Aug. 25—While all this excitement is going on over the return to this country of the Thomas Flyer, it must not be forgotten that the New York-Paris run is not all over. A cable today from Moscow states that the Zust, the Italian car, has reached that city, sadly in need of repair. In the meantime the winner of the race has started on a tour through New York state, in charge of George Schuster and George Miller, being billed for stops in Utica, Syracuse and Rochester, after which it will be shipped back to New York to take part in the parade in honor of the Olympic winner, to be held Saturday. Then it will be shipped to Rochester and driven over the road to the home office at Buffalo.

BUGGY CAR PLANT MOVES

Cincinnati, O., Aug. 24—Cincinnati capital has purchased the plant of the Postal Auto and Engine Co., of Bedford, Ind., and moved it to Cincinnati. Those interested have incorporated under the name of the Buggy Car Co. Their plans are to add many new improvements to the cars, but they will continue the building of the high-wheeled air-cooled type. The new engine will be 18 horsepower. The company also will have for its new 1909 cars an 18-horsepower friction-drive car with only three working parts. The new car will be equipped with 36 and 38-inch artillery wheels with solid rubber or cushion tires.

THOMAS FOR CUP RACE

Rumor Buffalo Maker Will Put Car in Vanderbilt-Knox and Roebling Also Promised

New York, Aug. 26—Special telegram—It was stated from an authoritative source Wednesday that an entry of a Thomas car for the Vanderbilt race had been mailed direct from the offices of the E. R. Thomas Motor Co. in Buffalo to Jefferson de Mont Thompson, chairman of the cup commission.

In addition to this entry word comes from Trenton that the Roebling car now under construction there by W. A. Roebling, would also be entered. This is a four-cylinder machine, the motor of which has developed 140 horsepower under tests. It is expected to be ready for the road by September 15. An entry of a Knox car is also looked for. The first entries close Tuesday next, September 1, on which date W. K. Vanderbilt, Jr., is expected to return from abroad when interest in the race will be intensified.

The E. R. Thomas Motor Co., of Buffalo, has plainly indicated that it does not approve of the proposed unsanctioned race meet to be held at the Brighton Beach racetrack Friday and Saturday, September 11 and 12, under the auspices of the recently formed Motor Racing Association. The position of the Thomas company is set forth in the following letter, written by E. R. Thomas to the American Automobile Association, with authority to publish it if it so desired:

"All the Thomas cars entered in the 24-hour race to be held at Brighton Beach September 17, have been withdrawn for the reason that the E. R. Thomas Motor Co. cannot permit any of its cars, over which it has the slightest control, to participate in a race which has not received the sanction of the American Automobile Association, as it would disqualify our cars and our drivers from all events outside of the metropolitan district. We believe racing must be controlled by an authoritative body and as the A. A. A. has been controlling racing for some years, we see no reason why the conditions should change. In assuming this position, I feel as if we voice the sentiment of the largest majority of manufacturers, without whose assistance races cannot be successfully run. Under instructions, H. S. Houpt has withdrawn his entries in the Brighton Beach race."

Nevertheless, it is said that while H. S. Houpt has not yet entered a car, he will do so if arrangements can be made to obtain one. It is now understood that a total of fourteen cars has been guaranteed, two each from the following firms: Wyckoff, Church & Partridge, Lozier Motor Co., Fiat Import Co., Renault Freres Selling Branch, Palmer & Singer, Isotta and

Allen Kingston. Report has it that both A. A. A. and A. C. A. officials are prominent in the management of the meet, among the former being Charles Jerome Edwards, president of the Long Island Automobile Club. However, Mr. Edwards is at the present in California, but from a close personal friend comes the statement that he is confident Mr. Edwards has not authorized the use of his name in this connection.

SHEPARD WILL DRIVE BAYARD

Paris, Aug. 20—America will have a representative in the Bologne race to be held in northern Italy next month under grand prix rules, owing to the overturning of the Bayard-Clement car which finished fourth at Dieppe and the injuring of Driver Rigal. It is Elliot F. Shepard who has been selected to replace the French driver, who finished first of the native cars on July 7. The accident occurred while Rigal was running up from Barbizon to Paris after 2 or 3 days out practicing. Taking a turn at very moderate speed, one of the front tires burst; Rigal endeavored to straighten out his car and appeared to have succeeded, when his rear wheel struck a heap of stones, with the result that the car was overturned. Both driver and mechanic were imprisoned under the vehicle, Rigal suffering a dislocation of the shoulder and his mechanic internal injuries, which although painful are in no way serious. The car was practically undamaged, and was immediately taken over by Elliot F. Shepard for training.

ROAD CONGRESS SPEAKERS

London, Aug. 19—Britishers will take an active part in the first international road congress, to be held in Paris from October 11 to 18, under the patronage of the French government, for in addition to a delegate appointed by parliament, several papers will be read by the English delegates. Colonel Crompton will deal with "Improvements in Self-Propelled Vehicles So As to Reduce Road Wear"; C. S. Rolls will deal with the effect of the "Road Surface on the Vehicles"; Lord Montague has taken for his subject "The Value of Good Roads"; Rees Jeffreys deals with "Systems of Highway Administration Compared—Their Influence on Cost and Efficiency." A paper will also be contributed by Dr. H. S. Hele-Shaw, F. R. S.

AMERICANS IN FRENCH SHOW

Paris, Aug. 18—Entries for the eleventh annual Paris salon, to be held in the grand palace during November and December, closed on Saturday, the total of the demands for space being quite equal to previous years. In addition to the numerous makers of machine tools who show their products through agents, America will be directly represented by Ford, Cadillac, Buick, Goodrich tires and Rushmore searchlights.

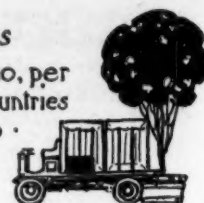


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MOTOR AGE

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Improved Grade Crossing Signs

FOUR motor cars demolished and passengers seriously or fatally injured within the last week is a sufficient bugle call "to arms" of the motor clubs in these immediate localities to take steps towards the erection of suitable signs for warning purposes along the roads at a reasonable distance at each side of the railroad crossing. Not only should motor clubs, in vicinities where accidents have occurred take action but all clubs within whose jurisdiction or zone of activities dangerous grade crossings exist take similar action. The average railroad crossing sign is of little use in that it is close to the tracks and unless it can be seen for considerable distance before reached there is not room enough for the car to be stopped if traveling at speed. Special roadside signs should be placed at least 150 yards at either side of the track, such signs being located close to the beaten track or part of the highway and not across the ditch or close to the fence. On such signs could be suitable wording, "Railroad Crossing 150 Yards," which would serve for daylight but prove ineffectual for night traveling. The night problem offers particular difficulties in that the sign cannot be read unless so located that the headlights' glow would fall upon it, which is possible if placed close to the road.

Special Shape Sign Suitable

SHOULD a driver be traveling alone such a sign might be passed without notice. To avoid such exigencies a particular shape of sign should be adopted throughout the entire country, the form to be circular of a given diameter, elliptical, square, octagonal or of any other form, providing it is uniform, from the Atlantic to the Pacific, and of the same size wherever used; and invariably placed close to the roadside. At night the light from the headlights could not fail to fall upon such a sign and the driver without having to read or stop to think immediately knows that a railroad is a certain distance ahead of him.

Colored Lights for Nights

IN extra dangerous crossings where traffic is heavy and fast passenger trains are frequent, additional precautions are absolutely necessary if the crossing is the least secluded. The average bell at such a point is not enough in that with the noise of a machine, if the muffler is opened, it cannot be heard. For night work at such crossings a green light would be best. A small incandescent globe carried on the special railroad sign-board 150 yards from the crossing would be sufficient. By electrical connection such a light could be lighted by a connection formed between the wheels of the locomotive and the track when the train was a certain distance from the crossing, that distance being sufficiently great so that a car within the 150-yard zone would have time to make the crossing in safety.

Crossing Gates Useless

THE cost of upkeep of such a signal would not be heavy, and if borne by a club would be slight during an entire season. Gates are useless in country roads unless the antediluvian system in vogue in France were adopted in which after sunset the gates across the highway at railroad crossings are locked, and it is often necessary to get out and waken the gateman before they are lifted. These gates are dangerous in that the light is carried on the gate, and the motorist making his first trip through France may suddenly come upon such a light and not have room to stop, being compelled to wreck his car on the gates or in the ditch.

The Status of Car Balance Imperative

THE smaller-motored and higher efficiency car talked of a few years ago is fast arriving, and before the last chassis of the 1909 output have been delivered more phenomenal steps in this direction will have been taken. While officially Germany set the ball rolling in this direction by limiting the diameter of the motors in the Prince Henry tour, France also lent aid by the limitation clause in the size of motors in the grand prix race, and now England has prohibition clauses in the contests she is promoting. When such limitations were placed on cylinder diameter, the cry of "not enough horsepower" was heard as well as that of "cutting down the speed." But the opposite has been the result, the cars being speedier and more powerful. Perhaps not absolutely more powerful, but taken into relation with all of the car parts, more powerful in that it is capable of propelling the machine faster, due to the lightening of the machine by the employment of superior metals as well as by a pruning process. Performances made during the present season in hill climbs have shown the little car selling around the \$1,000 mark to be faster than the \$4,000 car of two seasons ago was; and in endurance contests these little creations behave with a score equal to that of the big machines.

Improved Body Suspension

MUCH of the improvement is due directly to improved design of the motor and the more accurate construction of its parts; but it must not all be attributed to these; a part is because of the improved systems of transmission, the improved suspension of the car on its axles and the more even suspension of the entire carload between the front and back axles. Tests have proven that a well balanced car has advantages in speed contests over those machines in which everything is huddled around the forward axle with a large percentage of the weight balanced in front of the axle. Unevenly balanced machines impose needless wear upon the tires, place undue strain on the forward axle and steering parts and are largely responsible for skidding, spinning of the rear wheels and many of the well-known sins so closely allied with them.

Motor and Work Are Equal

NOT only is an even balance between the axles imperative, but there must be a pronounced delicacy evidenced in the balance between the motor and the work to be done. The days of the 75 or 90-horsepower runabout for regular use are over; the 65-horsepower touring car is not such a talking point as it was a few years ago; and while the smaller car has arrived its speed is equal to that of the bigger machines. Speed trials on the flat have proven this, the 40-horsepower machine making practically as fast time as the 75-horsepower road locomotive. This small car supremacy is not because its motor on the block test will show up as high as the 75-horsepower one, but due solely to an equity of balance between power generated and the work to be done, and in the solution of which is much of the success of the coming car. Motor efficiency has not been the subject of that careful investigation which it deserves. Instead of refining the motor many of the amateur makers have followed the course of adding more power, and under this cloak have concealed many of the defects that rob a power plant of its efficiency. The knowledge that the layman has of late gained of horsepower, as well as bore, stroke, cylinder capacity and efficiency is such as to demand makers to give the closest heed to all of these.



CURRENT COMMENT



UNLESS the east looks most promptly to its laurels and interests, the far west seems in a fair way to outstrip it in the race for good roads, which within the last 12 months has got going so auspiciously in almost every populous state of the union. As stated recently in *Motor Age* the electorate of Los Angeles county, California, put through by a vote of over three to one a bond issue, having for its scientific purpose the immediate expenditure of \$3,500,000 on a comprehensive system of scientifically-built county highways, totaling 307 miles. To the casual newspaper reader the brief accounts of this progressive action by an enlightened community might seem to possess only passing interest, but a more critical analysis quickly develops facts and conditions of extraordinary significance. For one thing, let it be considered that the amount of this appropriation so unanimously made by the people of a single county of the golden state is one-fourteenth as great as the total demanded for the entire country by the Brownlow bill, which only 3 years ago was defeated by the solons at Washington on the ground that it was too terribly extravagant to squander \$150,000,000 on improving the national commonwealth with good roads. For another, let it be understood that the fact of its limitation to a single county must not obscure the importance of this newest highway appropriation, for Los Angeles county is very nearly as large as is the state of Connecticut, is twice as large as Delaware, and four times as large as the state of Rhode Island.

That the appropriation must mean really good roads is assured by the liberal basis on which it is figured. The \$3,500,000 divided by 307, the total mileage, comes to \$11,400 a mile—a sum amply sufficient to the building of the type of highways that make of Europe a paradise for touring motorists. And it is just this type that it is intended to construct, for the waste of good American dollars abroad by seekers for good motor going has been coming home more and more to the business interests of southern California—a section which finds both growth and prosperity in an increasing touring contingent.

Already a start has been made on the kind of good roads it is proposed to build, the magnificent Huntington boulevard between Los Angeles and Pasadena being now well along toward completion. This boulevard is about 10 miles in length, and besides having wide turns and easy gradients, is of ample width and splendid surface. A perfectly graded and lightly crowned foundation of unusual thickness is

the basis of this example of good roads building, while the top dressing is a highly durable sort of "oiled macadam"—a dust, mud and wearproof surfacing that secured the evenness of asphalt without its slipperiness and perishability. All of the new 307 miles will be similarly built and surfaced, the work being in charge of A. E. Loder, a United States engineer, who, for his expert knowledge of road-making, was recommended to the authorities of Los Angeles county by Secretary Taft.

As for the perils of graft and misappropriation, these will be minimized by the wide publicity given the enterprise and by interested watchfulness of various powerful organizations, such as the militant Automobile Club of Southern California, which, with a membership some 1,400 strong, is a power to reckon with in the affairs of the great southwest. Indeed, in no part of the country are motor interests more powerful than in California, in which there is a motor car to every 100 of the population.

Los Angeles has many more motor cars than any other city in the world of anywhere near its size, while the state list is increasing at the rate of 600 a month, despite a total population of only 1,800,000. Moreover, the good roads sentiment in California is on a commensurate basis, as

is witnessed by the fact that other counties of the state are on the verge of putting through heavy bond issues for road building. In this way it is fully expected to attract many eastern motorists, a proportion of whom will, of course, be certain to become permanent residents.

Probably nothing better impresses upon one the magnitude of the Los Angeles county road plans than a consideration of what these plans would involve if extended proportionately to the entire United States. The population of Los Angeles county is about 350,000, so the bond issue of \$3,500,000 is equivalent to \$10 for each individual in the county. On the same basis, the population of the whole country being about 85,000,000, \$85,000,000 would be required to provide all of the United States with as much good roads in proportion to population as Los Angeles county is on the verge of realizing. Or, to figure on a basis of proportionate areas, that of California county is 1-800th of that of the nation, which would require \$2,800,000,000 to provide the entire area with roads of similar extent and quality.

The method of providing so considerable a sum of money without working hardship to the taxpayers should be of interest to many communities. The total assessed valuation of all property in the county being about \$300,000,000, it was arranged that the payment of principal and interest on the bonds should be distributed over a period of 40 years, requiring the addition of only 40 cents per \$1,000 per annum to the tax rate. In other words, on \$1,000 worth of property a total of \$16 is to be paid in forty annual installments of 40 cents each, so if property now worth \$1,000 is, in the course of 40 years, enhanced by good roads to a value of more than \$1,016, an entry on the profit side of the ledger is assured. A more immediate result is the prompt importation to the county of \$3,500,000 of good Wall street money, which will be expended at once and the benefits of its expenditure enjoyed, while it will not have to be repaid for 40 years. One advantage of a lump appropriation of this kind and its immediate expenditure for a system of roads, is that an ideal uniformity of scientific planning and construction is thereby permitted. Surveying corps will be organized, rock quarries opened, machinery purchased, and small armies of laborers hired on the most efficient and best organized basis possible. Then, when the new system is completed, the regular annual county road appropriation will be wholly available for road maintenance and the building of minor laterals in that section.

Coming Motor Events

Mount Ventoux Hill-Climb—Annual Mount Ventoux hill-climb in France, August 29.

Volturette Race—Volturette contest promoted by French L'Auto, September 1-8.

Coast Reliability—San Francisco-Los Angeles reliability run, September 5-9.

Speed Trials—Automobile Club of Bologna's Speed trials, September 6.

Commercial Trials—Automobile Club of Italy's heavy vehicle competition, September 6.

Florio Cup Race—Annual Florio cup race, Bologna, Italy, September 6.

Lowell Road Race—Labor day road race of Lowell Automobile Club, at Lowell, Mass., September 7.

Denver Race—Denver Motor Club's 300-mile endurance race, September 7.

Springfield Hill - Climb—Hill-climb of Springfield Automobile Club on Wilbraham hill, at Springfield, Mass., September 11.

Austria's Big Climb—Automobile Club of Austria's annual Semmering hill-climb, September 20.

Southwestern Endurance Run—Kansas City Automobile Club's endurance run through Kansas, Missouri and Oklahoma, about September 20-30.

Massachusetts Test—Bay State Automobile Association's 24-hour endurance run, September 23-24.

Four-Inch Race—"Four-inch race" for Tourists' trophy, on Isle of Man, September 24.

Thousand-Mile Reliability—Chicago Motor Club's 1,000-mile reliability run, postponed from June, October 6-9.

LAY OUT TOLEDO RUN

Reliability Scouts Swing Around 500-Mile Circuit—Find Good Roadways for the Test

Toledo, O., Aug. 23—Wednesday, Thursday, Friday and Saturday of the week just past were spent by officials of the Toledo-Columbus-Cleveland reliability run in laying out the route of the event. Leaving Toledo Wednesday R. K. Davis, of Detroit, who accompanied the party a portion of the way; Howard L. Spohn and Charles A. Baldwin, of Toledo, and with Charles Kaewel at the wheel of the big model K White steamer, made a swing around the 500-mile circuit and completed arrangements for what is unquestionably certain to be one of the greatest events held in this section of the country.

The first day's run was made over fine level roads with but a little clay leading through Findlay and then Marion, back to Kenton and down through Marysville into Columbus. From Columbus the second day's lay out takes in Mt. Vernon, Wooster, Canton, Akron and Cleveland. This is the hardest day's run of all. But the roads are all perfect and the scenery simply idyllic. The last day's run was laid out from Cleveland through Elyria, Clyde, Fremont, south to Tiffin and Fostoria and back to Toledo. In the entire run not more than 30 miles of sand was encountered and regardless of weather conditions the trip will be enjoyable.

Entry blanks have just been sent out and tomorrow will be taken around to the local dealers, so that within the week a good number of cars will be definitely arranged for. Twenty-odd have been absolutely promised so far, but by the way the idea is taking it will occasion no surprise

if at least forty participate in the event when it is held. One thing is certain, the route goes through the cream of land in this part of the country and some scenery so beautiful as to be most unbelievable in this level land is encountered each day. Pikes are numerous and a fast schedule will be maintainable. In addition to this seven or eight county fairs will be encountered and they are advertising the run as a means of drawing people into the towns.

FIGURES ON BRITISH TRADE

London, Aug. 16—The British officials' returns for the first 6 months of this year show importations into the United Kingdom of 3,879 motor car chassis and complete cars valued at \$6,574,797, as against 2,801 cars valued at \$5,706,249 for the corresponding period of 1907. In 1907, however, parts and fittings equaled \$6,405,992, while this year they only amounted to \$4,068,715. Motor cycle imports also show a decrease despite the increase in popular favor of this kind of sport. During the first 6 months of this year the import figures were 908 motor cycles, valued with parts at \$176,201. For the same period last year the figures were 1,142 motor cycles, valued at \$241,558. As to British exportations for the 6 months ended June, 1908, some 390 motor cycles and parts, valued at \$119,156, were sent abroad in comparison with 330 motor cycles and parts, valued at \$127,171, for a similar period of 1907. Thus, despite an increase of sixty in the number of motor cycles exported, the total export value decreased by some \$7,300. For the first 6 months of this year 991 motor cars were exported from the United Kingdom, a big increase over last year's figures, which were 886.

RUN FAR ON A GALLON

Good Showing Made by Cars Participating in Fuel Test of Motor Club of Harrisburg

Harrisburg, Pa., Aug. 18—Few economy runs have been held this season, the "fashion" seeming to run to reliability tests and hill-climbs. The Motor Club of Harrisburg, however, experimented with a fuel affair last Saturday and succeeded in running off a contest that compared most favorably with the big reliability test it held last spring. There was no formula in connection with the event; each car was given 1 gallon of gasoline and sent about its business. There was a classification of the field, though, there being eight divisions.

Twenty gasoline cars and one electric took part, the course being 4 miles in length and laid out on the paved streets of the city, the results being particularly gratifying from an economical standpoint. The greatest mileage on 1 gallon was registered by a single-cylinder Cadillac of the vintage of 1903, which demonstrated that age had not affected it in the least. The Cadillac driver played stingy and as a result he had covered 38½ miles before the last drop of essence had been converted into gas. The results were as follows:

CLASS NO. 1—SINGLE-CYLINDER CARS		
Car	Entrant	Mileage
Cadillac	Harrisburg Auto Co.	23.9
Reo	George W. Myers	38.5
CLASS NO. 2—TWO-CYLINDER RUNABOUTS		
Jackson	Motor Vehicle Co.	31.6
Maxwell	John Sellers	31.3
Ford	C. L. Scott	26.5
CLASS NO. 3—TWO-CYLINDER TOURING CARS		
Maxwell	Andrew Redmond	33.2
Jackson	Motor Vehicle Co.	30.2
Maxwell	F. H. Baumgardner	18.3
CLASS NO. 4—FOUR-CYLINDER RUNABOUTS UNDER \$1,000		
Buick	Central Pennsylvania Auto Co.	28.6
Ford	Harrisburg Auto Co.	22.4
CLASS NO. 5—FOUR-CYLINDER RUNABOUTS, \$1,000 TO \$2,000		
Franklin	Paul Messner	32.6
Pullman	Robert Morton	24.2
CLASS NO. 6—FOUR-CYLINDER TOURING CARS UNDER \$2,000		
Pullman	J. A. Kline	27.8
Franklin	Frank Oenslager	21.5
CLASS NO. 7—FOUR-CYLINDER TOURING CARS, \$2,000 OR OVER		
Cadillac	C. C. Crispen	27.5
	Central Pennsylvania Auto Co.	17.5
Franklin	W. F. Graupner	15.8
Stoddard-Dayton	J. M. Jaycox	13.6
CLASS NO. 8—FOUR-CYLINDER RUNABOUTS, \$2,000 OR OVER		
Cleveland	G. L. Strayer	20.2
Pullman	E. G. Irvin	19.0
CLASS NO. 9—EXHIBITION RUN ON SINGLE CHARGE		
Columbus Electric	Andrew Redmond	140.0

The Columbus electric was not in actual competition with its gasoline rivals, having been entered by Andrew Redmond, who started at 1 o'clock Saturday afternoon and ran to midnight, in which time he had covered 119 miles. Still there was plenty of "juice" left and the car was locked up in a garage until Sunday morning, when Redmond once more hit the



ON OHIO'S RELIABILITY ROUTE—FINE 10-MILE STRETCH NEAR COLUMBUS

trail. The Columbus had 21 miles more up its sleeve and when it finished its effort it had a total of 140 miles, which is claimed as a world's record for a standard electric car on a single charge.

Each of the cars had to carry its full quota of passengers and there was considerable excitement in this city all of Saturday afternoon. The 4-mile circuit made the test almost a merry-go-round and the general public took genuine interest in the affair. So encouraged is the club with the success of its contests this summer that it has decided to hold a 100-mile road test in September.

HOOSIERS SET TEST DATES

Indianapolis, Ind., Aug. 24—The fall reliability run under the auspices of the Indianapolis Automobile Trade Association will be held October 1 and 2 and the technical committee is now arranging the rules to govern the contest. As predicted, the committee decided upon a trip to French Lick and return, making the first day's run about 140 miles and the second day's trip approximately 120 miles. Leaving Indianapolis the route will include Columbus, Seymour, Mitchell, Orleans and Paoli; returning the route will be through Bedford, Bloomington and Martinsville, spending the night at French Lick. At a meeting of the association, held last Tuesday night, George A. Weidley, of the Premier Motor Mfg. Co. was appointed chairman of the technical committee to draft the rules. His assistants will be W. G. Wall, of the National Motor Vehicle Co., and Howard Marmon, of the Nordyke & Marmon Co. L. M. Wainwright, of the Diamond Chain Mfg. Co., will act as referee. It is expected the rules governing the recent Glidden tour will be used as nearly as possible and the majority of the cars to be entered will be 1909 models. The American Automobile Association has been asked for its official sanction.

PREMIER HEADED WEST

Washington, D. C., Aug. 22—The Premier century car arrived in Washington Tuesday afternoon from Baltimore, having been driven over the road from the Monumental City. The century run for the seventy-ninth day was completed in this city, and a full run of 110 miles was made here Wednesday. The car left Washington Thursday morning for Frederick and Hagerstown, Md., and will continue on its trip westward via Cumberland, Md., Pittsburgh, Pa., and Columbus, O. J. W. Moore, who is driving the car on its last leg of its 300-day trip, was delighted with his Washington visit. He had free access to all the parks and was not molested, being permitted to drive where his fancy dictated. Lester D. Moore, Jr., the local Premier agent, escorted the century car out of town as far as Olney, Md. The car's two odometers registered 9,536 miles when the car left Washington.

FOREIGN TRADE HINTS

Government Officials Say There Are Good Openings in Algeria, Spain and Canada

Washington, D. C., Aug. 21—American motor car manufacturers who are bidding for foreign trade will be interested to learn that there are good prospects for a permanent market in Algeria for a light, strong, moderate-priced car. Motor cars are extensively used in that country by wine and oil merchants who have to travel in districts where as yet the railway does not exist. In order to introduce American cars and establish a market therefor the manufacturer must be prepared for a little expense. The only effort that appears to have been made thus far in this direction has been to send catalogs in English, but it is unreasonable to expect to sell motor cars on the strength of catalog description, and no agent would entertain the idea of representing a line of cars unless he had a sample car for demonstration. The duty on motor cars from the United States is \$115.80 per ton of 2,240 pounds on cars weighing 125 kilos and over. The duty on the same cars from other countries is \$96.50 per ton.

There are more than 700 motor cars in Spain's capital city, Madrid, and a good market for more, including American cars, if they can compete with those now on sale. No American cars are now in that market. The machines now in stock are owned by the manufacturers who send them to their representatives to sell on commission.

Comparatively few motor cars are owned in Prescott, Canada. There are perhaps half a dozen in Brockville, three in Pres-

cott and a few elsewhere scattered about that section, but for some reason their use has not become common. Nor is this for reasons of expense, as there is much wealth among the people. There does not appear to be a regular agency in that section for the sale of cars. There ought to be such an agency, and it is believed that a car of moderate cost would find a good sale, if such sale were pushed by the personal appeal of a good agent.

The roads of that section are no better nor are they worse than is the case of the average country section, while the main thoroughfare, east and west, along the St. Lawrence river, is, much of the way, macadamized, while its scenic attractions are hard to duplicate anywhere. There is hardly a day during the season when motor cars do not cross the St. Lawrence to Prescott by ferry from the United States, en route to Toronto, Montreal, Ottawa, and other points of interest to tourists through Canada. That section is well worth prospecting by the manufacturers of moderate priced cars of American make.

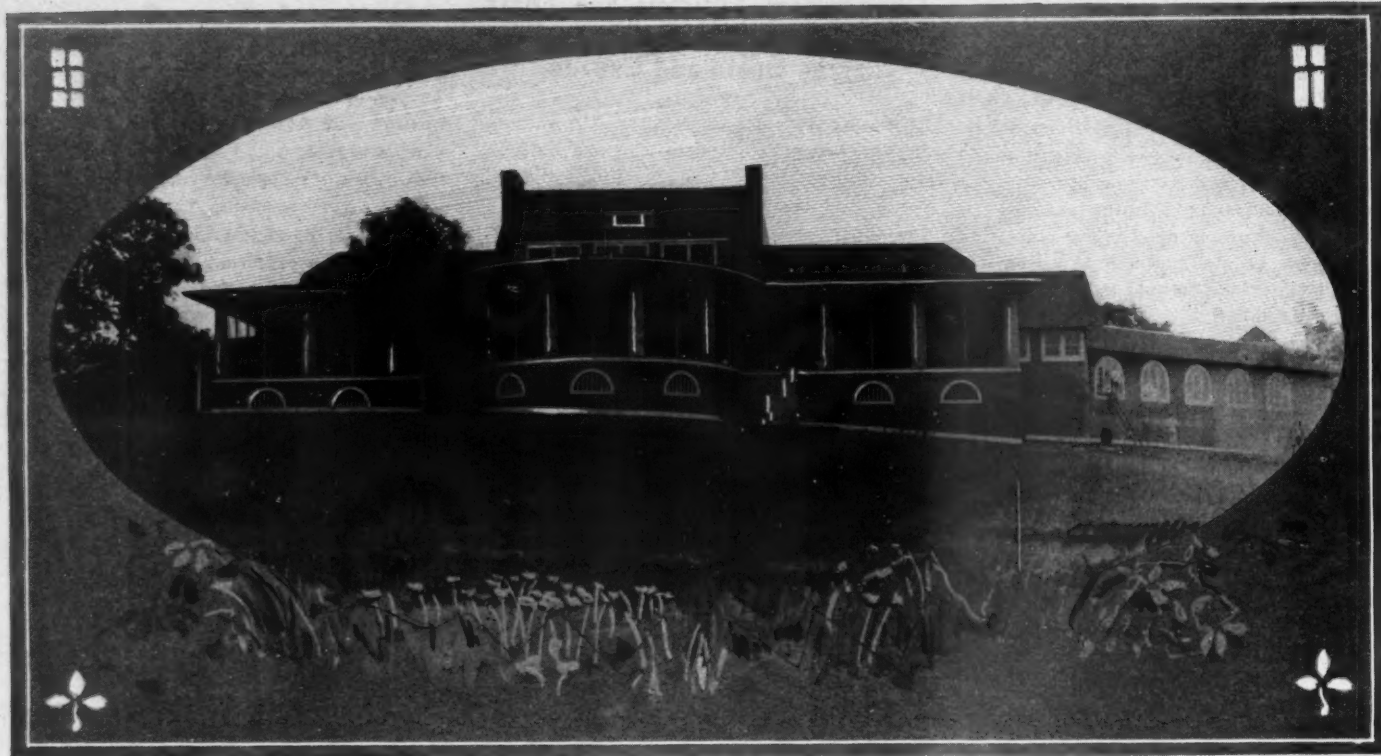
PROMINENT MAKER SHOT

Milwaukee, Wis., Aug. 24—Louis Kissel, president of the Kissel Motor Car Co. and numerous allied interests at Hartford, Wis., was shot by a disgruntled employe, John Gerbier, in his office at Hartford last week, and is now in a precarious condition at Milwaukee hospital, in this city. Apparently Gerbier had a grudge against Otto Kissel, a son, but vented his spite on the aged manufacturer. He had been discharged the night before. Mr. Kissel has lived in Hartford for 24 years and was possibly the leading manufacturer and business man of the little manufacturing city located near Milwaukee.



ON OHIO'S RELIABILITY ROUTE—McKINLEY'S TOMB AT CANTON

MINNEAPOLIS CLUB IN ITS COUNTRY HOME



GENERAL VIEW OF THE NEW COUNTRY HOME OF THE MINNEAPOLIS AUTOMOBILE CLUB

MINNEAPOLIS, MINN., Aug. 22— With an informal reception to the 175 holders of the bonds of the new building, the Minneapolis Automobile Club today opened its attractive new country clubhouse, located on a 200-foot bluff overlooking the valley of the Minnesota river, 16 miles from the center of Minneapolis. The completion of the \$20,000 clubhouse on the Minnesota river hills marks the most important step the Minneapolis club has taken, and one which brings the club to the front rank of American motor organizations. The country clubhouse is an "incidental" in the well-organized campaign which the Minneapolis Automobile Club has been conducting for the past 3 or 4 years for good roads, state-wide erection

of sign and guide posts, the prevention of unjust legislation, the securing of accurate touring information, and the perfection of an organization powerful enough to wield an influence with city, county and state officials, in the securing of fair and equal treatment for the motorists. In addition the club also has promoted a big reliability and will hold a climb Saturday.

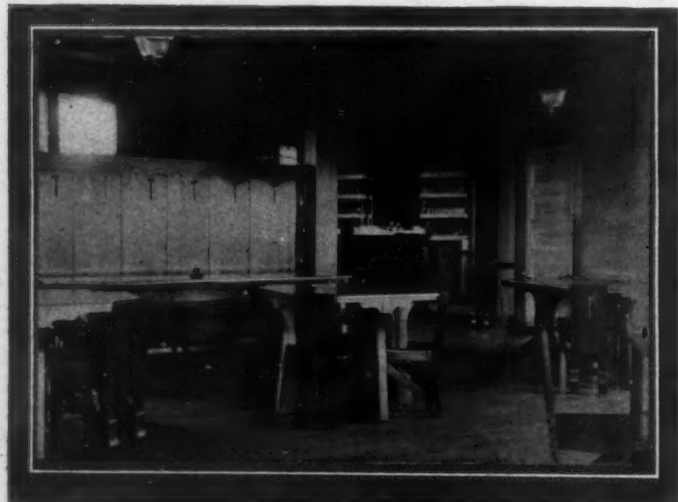
The work done by the Minneapolis Automobile Club has not been excelled by any club in the country. With the opening of the new country clubhouse, the organization has two well equipped homes, one occupying the ground floor of the Plaza hotel, Hennepin avenue and Kenwood parkway, Minneapolis, and the other located just off a well-traveled road at the heart

of a beautiful stretch of country, which can be reached from any of the principal highways about Minneapolis, St. Paul or Lake Minnetonka.

The new clubhouse has been erected and equipped, and the town house has been maintained solely for the purpose of enlarging the membership and strength of the club, and more firmly cementing its

membership together. Directors and members of the club have not attempted to make the organization a social one; they have recognized the fact that in a large club of such general scope this would be impossible. Neither have the social features been ignored in the effort to make the club attractive to all motorists. The club's directors and officers have been working tirelessly and with phenomenal success to build up an organization which will be of permanent and practical benefit to the motor and good roads causes in Minnesota, and their efforts are evidently to be crowned with further success this fall. The membership of the club is now above the 700 mark; and the directors are confident that the added attraction of the country home will boost the membership to 1,000 before the end of the year. This membership includes the most prominent business and professional men of Minneapolis, and the influence of the club has been widely felt during the last 2 years, in the shaping of fair legislation, and in the development of systematic road improvement and road maintenance.

The new country clubhouse is located at one of the most secluded spots in the valley of the Minnesota river, opposite the little town of Savage, where the famous Dan Patch and Cresceus stables are located. The white buildings of Savage, nearly 2 miles away, are practically the only structures visible in the 25-mile sweep of river valley which the great porch of the clubhouse commands. The clubhouse is located on the edge of the bluff. It is built in a semicircular form. In the cen-



ONE CORNER OF DUTCH TAP ROOM

ter is the main portion, two stories high. This portion has the main reception room, with great fireplaces at each end. The porch is 90 by 35 feet, entirely enclosed with wire screens, and upon this porch the dining room will be maintained throughout the summer.

In the main portion of the house are the Dutch tap-room, the club offices and steward's quarters, shower baths for men, and bath and toilet rooms for women, and on the second floor six bedrooms. There is also a dormitory for men, to hold at least ten, and another dormitory for women, which can be made to accommodate six. With these facilities the club already has proven popular for small house parties, and provisions can be made for thirty guests in time of emergency. The total length of the building is 320 feet. Between the central portion of the building, and the small houses at either end, are the covered stalls for cars, six on each side. A hundred cars can be parked back of the clubhouse. The houses at the ends are fitted up respectively for the women and men employees at the clubhouse. In the women's section is the laundry, and at the other end of the building the power plant.

A complete acetylene gas system, artesian water from a 200-foot well, hot and cold water throughout the building, private sewerage system, ice house, refrigerating system, telephone system and a kitchen with ranges to accommodate 200 guests, are some of the features incorporated into the new clubhouse in the effort to make it thoroughly up to date and satisfactory. The plans for the house were made by Kees & Colburn, Minneapolis architects. The reception room has a heavy beamed ceiling, and through the entire central portion the brasswork and lighting arrangements are made to represent parts of motor cars, and to carry out the spirit of the

club life. The house is in charge of a capable steward, who runs both of the club's establishments, and an excellent chef and corps of assistants are making the country house the rendezvous of motoring from St. Paul and Minneapolis.

Breakfast parties go from Minneapolis to the clubhouse nearly every day. Table d'hôte dinners are served Saturdays and Sundays, and on the Sunday before the formal opening, over 400 people were at the clubhouse. The club is reached after a 16-mile run out Lyndale avenue and through the town of Bloomington. Another drive of about 50 miles is by way of Lake Minnetonka, over excellent and popular roads. St. Paul motorists can take the Fort Snelling road, and go over the old government trail, about 50 miles, to the club; or can cross the river at St. Paul, taking the east bank of the Minnesota, and crossing the river at Savage, a drive of about 60 or 75 miles.

The club is to be made readily accessible by the Dan Patch air line, a trolley road which is to pass under the bluff near the clubhouse. The club has a tract of 10 acres running down to the Minnesota river. It is planned to put in a 60-foot harbor in the river, and furnish all conveniences for canoeists, as the Minnesota veniences for canoeists.

The clubhouse was built through the medium of a bond issue of \$15,000, the



MEMBERS HAVE 25-MILE VIEW OF VALLEY

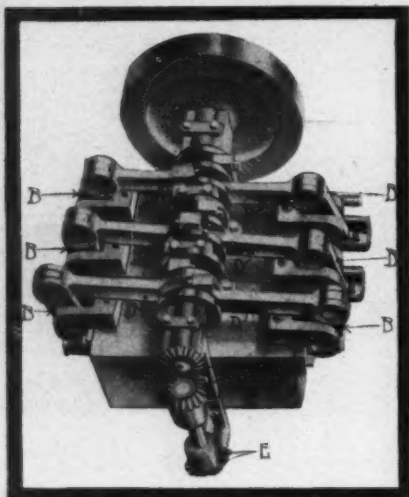
bonds running 10 years at 5 per cent interest. The \$25 initiation fee for entrance into the club is to be set aside as a sinking fund for the retirement of these bonds.

Directors of the Minneapolis club feel certain that the social features embodied in the new house will strengthen the interest in the welfare of the organization. The club has been excellently managed; its board of directors include the foremost men of the city, and they have given continuous personal attention to the club's work. Its officers serve without compensation, and have rendered invaluable service this summer in carrying the pretentious schemes undertaken. George H. Daggett, who has been chairman of the building committee, has given personal attention to all the details of the work. The building committee included Mr. Daggett, Colonel F. M. Joyce, president of the Minnesota State Automobile Association, E. L. Brown, H. E. Pence, R. R. Colburn and C. F. Haglin, all hard workers.



ANOTHER VIEW OF THE CLUB, SHOWING COVERED STALLS FOR MOTOR CARS

CARBONIC ACID GAS MOTOR DEMONSTRATED



CARROLL'S CARBONIC ACID GAS MOTOR

SOME years ago it became known around Philadelphia, Pa., that one John Carroll, a local mechanical genius, was hard at work on a scheme to adapt carbonic acid gas as a power to drive motor cars. The delay in the appearance of anything tangible, despite the favorable progress reported from time to time, made the local public—the motorist element particularly—decidedly skeptical as to the outcome of Carroll's effort.

But recently the inventor gave a private view of the workings of his engine in his shop and announced a public test on the following day. Both were apparently successful. In the shop test Carroll ran the motor $\frac{1}{2}$ hour, starting and stopping it at will. The street test was really quite convincing, and whatever the merits of his system, Carroll made good on this occasion. The engine was mounted on an old curved-front Oldsmobile runabout chassis, with an improvised seat for the operator. With a big crowd looking on and a number of newspaper men following in a gasoline car, the carbonic acid gas machine was driven up Broad street, out to Fairmount park, across City Line bridge, and up the stiff City Line hill from the Schuylkill river to the crest of the west bank, stopping and starting several times on the hill to demonstrate the engine's flexibility and power. At the top of the hill the left front tire exploded with a loud report, and everybody was afraid that something had happened to the engine. But Carroll reassured them and drove back to town with a flat tire, allowing the car to stand on the street with engine exposed for fully 2 hours while securing and adjusting a new tire. With the front axle jacked up, Carroll accomodatingly stopped work on the tire several times to answer questions and demonstrate the ease of control of his new power.

Carroll's engine seems remarkably small for the amount of power shown—even though it may not develop the 100-horse-

power he claims for it. In dimensions it is but $13\frac{1}{2}$ by $10\frac{1}{2}$ by $4\frac{1}{2}$ inches, machined from a solid piece of steel, and whatever its merits, the engine is certainly a beautifully fitting and well-finished bit of work. There are three cylinders and six pistons, the latter moving longitudinally. The cylinders are 2-inch bore and the pistons 2-inch stroke. At the right of and underneath the engine behind the front axle is the gas tank A which is connected with the engine by a small copper tube about $\frac{3}{8}$ inch diameter. The gas, passing through this tube into the engine, is allowed to expand between two pistons, forcing the latter outward, the pistons being connected to rocker arms B which in turn are connected with the crankshaft C which has six connecting rods D. The valve motion is connected by direct gearing, which never changes. Control is by a small hand lever, which starts, stops, accelerates or slows down the engine and reverses it when necessary. The control is altogether in the nature of throttling, and no changing of gears is provided for or necessary. The drive is by chain, direct to rear axle. When the gas has passed through the engine it is recondensed in a tank at the rear of the car, whence it flows back to the first tank, being used over and over again. In addition to these two tanks, which are of slightly greater capacity than the acetylene gas tanks carried on the footboards of many cars for lighting purposes, there is an auxiliary tank for conveying an extra supply of carbonic acid.

After returning from its trip from City Line hill the motor was cool; indeed, the operation of the engine produced little, if any, heat. Carroll says his motor cannot burn out or freeze. To prevent corrosion or oxidization in the tanks, a mixture composed mostly of kerosene is used.

To the average observer the absence of radiator, fan, carbureter and the many other requisites of the gasoline engine makes the Carroll power plant decidedly meager and bare looking. "Too simple to be good," one of the doubting Thomases said, although he admitted that the little engine was working beautifully. This very simplicity is Carroll's high card. He claims that it is possible to build carbonic acid gas motor cars in quantities at a cost not much, if any, in excess of 50 per cent of the present cost of building gasoline cars.

The low cost of upkeep is another of Carroll's strong talking points. The cost of fuel will be considerably less, while lubrication will be such a simple matter that mechanical oilers will not be necessary—a little lubrication applied by hand from time to time being all that is necessary. Since his first public demonstration of his carbonic acid gas motor Inventor Carroll has had many motorists examine the engine, all of whom apparently have been convinced of its simplicity. Carroll believes he has solved the motor problem and he is untiring in his efforts to convince others and at the same time to interest some maker, with the idea of manufacturing the motor in quantities.



INVENTOR CARROLL AND HIS CARBONIC ACID GAS MOTOR

GIRL'S IDEA OF DRIVING MODERN MOTOR CAR

FATHER has owned a motor car or "engine buggy," as I called it, ever since I can remember. He built the first one before I was 2 years old, and I have ridden in them whenever I wanted to do so since then. I have never driven the first motor car father made, because I was too small when we used it. It has been standing in the factory until the recent motor parade in New York.

I have always wanted to learn to drive a car. When I was 8 years old I guided a two-cylinder runabout 4 miles into the country, and father drove it back. That satisfied me for the rest of that summer, but the next year I wanted to go farther, or to go alone. Father finally gave me permission to drive around one block alone. I did this a great many times, always going on the slowest speed. I usually took two or three of the neighbors' children with me. Some of the neighbors would not let their children go with me, but they might as well have consented, as we did not have any accidents.

One evening I wanted to drive a machine around the block. The car, a two-cylinder runabout, was standing in the driveway, and father said that I might take it if I would back it out into the street. I started the engine—this was about the first time I had ever done that—and I backed it out of the yard. My grandmother was here at the time, and she said that I should certainly be killed if I started out at that age to drive.

One evening just about dark we were out riding and ran out of gasoline about $\frac{3}{4}$ mile from home. We were not far from the trolley line, so father went to the factory on a street car. He brought a can of gasoline from the factory in another machine. We did not know what to do with two cars. I suggested that I could take one of them home. Father and mother discussed this plan for a short time and finally agreed to allow me to drive the one home in which we had been riding. Father, mother and my brother took the other car and drove home on the slow speed. I kept very close to them all of the way, and we accomplished the run without an accident. I thought that after I had done as wonderful a thing as to drive



MISS BERNICE HAYNES

for $\frac{3}{4}$ mile without any accidents I certainly should be allowed to do it again, but father said that I must not, because if the engine stopped I could not start it.

About a year after this, when I was 11 years old, father had to go away. He took a car to the station, which is about $1\frac{1}{2}$ mile from the factory. As there was no one else at the station who could take it to the factory, he let me take it. This was the first time I drove alone on the middle speed.

I was not allowed to drive alone very frequently until last autumn. Mother suggested that we might take a ride on some nice day, and father said that I might take mother for a ride whenever she wanted to go. The second drive I took with mother last autumn, we decided that we wanted to gather some walnuts. Father said that we must not go directly to the walnut grove, as there was a bad hill to descend on the way. We went about a mile farther than the grove, and drove back to it on another road, thus avoiding the bad hill. I had let the engine run all of the time we were gathering walnuts, as we could not start it again.

Two kinds of gears are used on cars, the clutch gear and the sliding gear. The clutch gear is operated by a lever which releases the clutch when removed from a notch, and engages it when placed in a notch. In this way there is no possibility of having two sets of gears in operation at the same time.

The sliding gear is used on most four-cylinder cars. It has a short revolving shaft fastened to the engine. On the end of this shaft is a gear which communicates the power to another shaft by a larger gear. The power is then transferred to the driving shaft by a pinion on the former to a gear on the latter when slow speed is desired. The intermediate speed is secured by bringing two gears of about the same size into contact. The high gear is in use when the driving shaft is locked to the engine shaft.

When operating a sliding gear the clutch is released with the foot and the lever is placed in the position for the desired

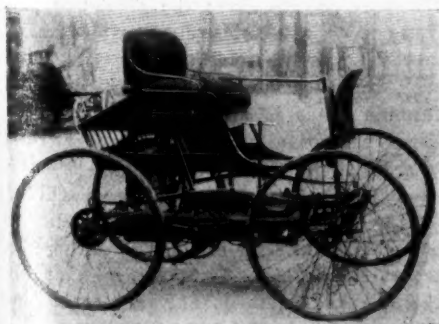
speed. The clutch should be let in gradually or the gears will become damaged. It is usually best to start on the slow gear, or the engine may be stopped. With some practice and a high-powered engine it is possible to start easily on the high gear. When a lower speed is desired the engine should be allowed to run at a speed corresponding to the desired speed of the car. The Haynes, the only car I have ever driven, is equipped with a patented device so that a lower speed may be thrown in at will and will take hold when the car has slowed down enough.

The spark should usually be placed below center after the engine is started. It must always be quite a distance above center when the engine is started, or it will explode too soon, and it may result in injury to the operator.

The throttle should be opened when starting the car. It is usually best to drive as much as possible on the high gear and regulate the speed of the car with the throttle. It is always advisable to turn all corners slowly, and to drive slowly on any wet place.

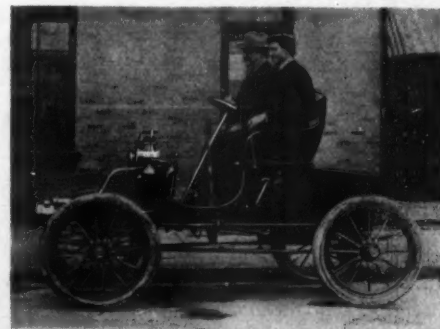
Small machines are often steered with levers. This is a very good way for small cars, but it is not best for large cars, as the lever communicates all jolts of the wheel to the hands. Wheels are used on large cars and are more serviceable.

When meeting a team on the road it is best to go slowly, but not to stop unless the occupants of the vehicle demand it. One should turn out well to right, far enough in front of the team so that the driver of the carriage may have plenty of time to get on the opposite side of the road and thus avoid any confusion. When passing a team from the rear it is advisable, after giving the occupants of the carriage a warning, to pass the vehicle slowly. With a high-powered machine this may be done with the high gear with very little noise. If the gear has to be changed it should be done before reaching the horse, as the noise made by changing gears might frighten the animal. When driving on crowded streets it is best to drive on the slow speed and be ready to stop instantly. A warning should be sounded at every corner.



"I HAVE NEVER DRIVEN THE FIRST MOTOR CAR FATHER MADE"

EDITOR'S NOTE—Miss Bernice Haynes, daughter of the manufacturer of the Haynes car, tells how she learned to drive a car in the accompanying article.



"THE CAR, A TWO-CYLINDER RUNABOUT, WAS STANDING IN THE DRIVEWAY"



The Readers' Clearing House



MOTOR CAPACITY PER HOUR

Chicago—Editor Motor Age—How many cubic feet of air would a six-cylinder engine, of 3 $\frac{3}{4}$ -inch bore and 4 $\frac{1}{4}$ -inch stroke, at 1,000 revolutions per minute, consume?—Subscriber.

Your inquiry neglects to state if the consumption wanted is in cubic feet of the engine in 1 minute or 1 hour, both of which are given in this reply. A motor of this size has 336.1 cubic inches piston displacement. This, operating at 1,000 revolutions per minute, would require 500 complete charges, or 168,050 cubic inches per minute. The consumption at this rate for 1 hour would be 10,083,000 cubic inches, or 5,835 cubic feet. Motor Age assumes that by air is meant explosive mixture, by which is meant a mixture fifteen parts of air and one part of gasoline vapor.

BOOK ON MOTOR CARS

New Bethlehem, Pa.—Editor Motor Age—Noticing the inquiry of George Briggs, Bournedale, Mass., in Motor Age, August 6, I would say that the book he has reference to can be bought from Lansing-Mahon Press, 1329 Masonic Temple, Chicago, Ill. The advertisement is in the issue of Motor Age of January 9, 1908, page 68.—John Walters.

The book referred to is entitled "How To Know Automobiles" and contains 1,000 distinguishing features of cars.

PEDESTRIANS CAUSE ACCIDENTS

Evanston, Ill.—Editor Motor Age—There is no doubt that many motorists drive recklessly and do not think of people on foot; but there are very few people that give the driver of motor cars the credit he deserves. The latest records show that the street cars and the teams of Chicago have killed fifty-seven and injured over 1,500 people in the last 6 months; these are facts. In most of the suburban towns near Chicago, the police stand ready to shoot motorists who go above 15 miles per hour, while I have timed street cars in the heart of Evanston going 25 miles per hour. Most people on foot think that a motor car can stop as quickly as they can; but, if it is hard for a single person to get around in the congested streets, what do they think of the man who has to manipulate a touring car that weighs from 3,500 pounds to 2 tons? Nine times out of ten, when the policeman gives you the signal to cross the street, there will be three or four women waiting to cross the street at the opposite direction and who always start to the same time you do and, of course, step directly in front of your car. The people walking on the street should watch the

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

policeman give the signal to cross as closely as the motorist does. There is no one who would hurt, or even scare, a woman, on purpose; but they cannot expect others to take care of them while walking on the street; they should use better judgment, and look very closely when they start to cross, also observe which way the traffic is going. Men are quicker on foot and also stronger, but even then it would be better for both sides if they watch closely before crossing the street. The motor cars of today have to have a state license, also a wheel tax license, and the paid drivers also have to have a license; and then, if some person walking across the street in a trance, happens to jump directly in front of you, instead of out of the way, everyone stands ready to mob the driver and wipe the car off the earth. Look at the street cars, cabs, dray wagons, and you will notice how the most of them are all marked and scratched and even broken up by coming in contact with other objects; and then look at the cars, and you seldom see one even scratched: that goes to show that the most of them are well handled. I have noticed people stand in the center of the street and chat with someone from 5 to 10 minutes, while, if a motor car should run upon the sidewalks they would think it something awful. I think when people get to know more about the situation they will take a different view of the matter.—Theo. B. Davis.

COMPARES TYPES OF MAGNETOS

Fairfield, Pa.—Editor Motor Age—What is the difference between a high- and a low-tension magneto? Is it necessary to use a coil with a magneto?—S. G. C.

A low-tension magneto is one which generates a current of low voltage, practically not exceeding 50 volts. This magneto is used on motors with a make-and-break device, and in which the regular spark plug is not employed. A low-tension magneto is also employed in a jump spark system, in which case the current from the magneto is passed through a single-unit coil and thence distributed to the spark plugs, the single unit coil being nothing more or less than a step-up transformer to raise the voltage to a height sufficient to bridge the space between the points of the spark plug. In a high-tension magneto a low-tension current is developed and this is stepped up to a high-tension current either by means of a double winding of the armature or by a transformer coil incorporated in the mag-

neto proper. This type of magneto has a commutator for making and breaking the low-tension or primary circuit, and generally includes also a distributor, from which wires connect directly with the spark plugs. In the high-tension magneto all of the high tensioning apparatus is incorporated, and the dash coil and timer on the engine eliminated. It is necessary, when a jump spark system is used, to make use of a coil with a low-tension magneto, but not with a high-tension one.

THE ALGONQUIN FORMULA

New York—Editor Motor Age—Will Motor Age kindly enlighten me, through the Readers' Clearing House, how the efficiency of an engine may be arrived at by using the Chicago Motor Club's formula, which was employed at the hill-climb at Algonquin August 15? I believe the officials multiply the cylinder displacement by the time made on two hills, and divide the result by the weight of the car, including the driver.—S. E. T.

Your information concerning the formula is correct, excepting that the time on the morning hill in seconds is multiplied by the cubic capacity of the motor in cubic inches and its product is divided by the weight of the car in pounds. This same figuring is done in the afternoon climb, and in arriving at the final standing of the car the morning and afternoon percentage are added, the car with the lowest percentage being the winner. The efficiency of the engine is determined in the following manner: The most efficient engine is the one that will perform a certain work with the least consumption of fuel, or in other words, expenditure of energy, the fuel exploded being synonymous with the energy expended for practical reckoning purposes. Dividing the weight into the cubic capacity of the cylinder gives the number of pounds each cubic inch of cylinder space must carry up the hill, and the number of seconds in time represents how long it takes the motor to do this work. The combination of the two—that is, the work done and the time spent—gives the efficiency percentage. The efficiency of any piece of machinery is the relationship between energy consumed and results obtained. This formula takes into consideration both of these features, although it is apparent that in order to get the most accurate efficiency it would be necessary to have an odometer on the crankshaft and take the number of revolutions of the crankshaft during the ascent of the hill. It is natural that all engine crankshafts do not revolve at the same speed, and the formula fails to take this into consideration. Any formula of this nature can but approximate results,

owing to the important factor of power being a variable that may differ very greatly. Nor does it take into account the personal equation in the shape of the driver, as skilful handling may make several seconds difference in the time required to ascend the hill, but this, of course, is something that could not be equalized by any method of calculation, so that, taken all in all, the formula may be said to work out equally well in favor of all the competing cars, particularly as the latter are classified according to piston area.

NEWSPAPERS FOR TRACTION

Allegheny, Pa.—Editor Motor Age—It is an ideal scheme to carry a few newspapers beneath the car seat or under the cushions when going on extensive tours. When the rear wheels begin spinning in a muddy spot a couple of these spread over the mud will often enable the rear wheels to climb out, thus avoiding the necessity of putting on the chains in an unpleasant place. Newspapers will also be found handy when any adjustments have to be made under the car. In case newspapers are not obtainable and a cornfield is at hand the corn cobs will do equally well. One or two thrown in front of the rear wheels or pushed under the tires will quickly aid in getting a car out of the mud. I have been able to obtain much greater mileage from four dry cells than from six dry cells, wired in series. When six cells are used, a much greater current is forced through the coils, which rapidly exhaust the batteries and also causes pitting and burning of the platinum contact points. If one wishes to use more cells it is better to connect them in series-parallel, that is, two groups of four cells, connected in multiple. When connected in this manner, they last quite a while.—Murray Fahnestock.

PREVENTS CROSSING ACCIDENTS

New York—Editor Motor Age—I notice that in spite of the great number of recent accidents at unguarded grade crossings and the resulting, yet resultless, talk that has followed, these accidents still continue. I would like to propose a new scheme, which, though cheap in itself, would not allow this wholesale loss of life to continue. By placing this in Readers' Clearing House I believe that it will receive due attention from all those interested. Leaving at the railroad tracks the present T sign, "Look out for the cars," I propose that on each side of the crossing, at from a half to a quarter mile out from the railroad tracks, a similar, or some conspicuous warning, sign be placed so that motor cars going in either direction will notice it. Then, no matter at what rate the machine is going, the driver, seeing the sign, will have sufficient time to slow down and have the machine under perfect control when the sign by the tracks comes into view. Then one of the party could get out, just as the conductors on

the suburban trolleys do. At present, where they try to remedy the danger at a place where the road makes a sudden bend and hides the crossing till just upon it, by placing a flagman there—even if they put gates there—the driver will have no more of a chance to escape the danger than if no man was there. In the nighttime a red light or some illuminating scheme to light up the sign could be placed on the first post. For a few cents a week some resident nearby would willingly attend to the lamps. Then another lamp on the post by the tracks would show the motorist where the tracks are. In this way, be it night or day, he no longer drives along ignorant of danger ahead. If the motor car clubs would get together, they could easily make railroads, the county or townships—whichever is responsible—place these signs on the roads. Why not let the clubs start in immediately themselves and set the example? It certainly would be much cheaper than putting men at the crossings and installing gates; the cost would be comparatively nothing. Surely human life is worth that much. For those reckless and heedless drivers who have more than harmed the reputation of the motoring public, should they continue their reckless pace and ignore such warnings and signals as they do the law, then let them dash on to that dreadful, inevitable, yet deserving fate.—Austin M. Wolf.

SELLING A PATENT

Chicago, Ill.—Editor Motor Age—Will you give me some information on the best way to sell a patent I own on a three-speed forward and one reverse planetary gearset, which works perfectly in every respect, but which I so far have failed to interest anybody in?—George J. Sogge.

In disposing of any patent the only way to effect a good sale is to get in touch with some people who can interest makers in your proposition. You might start by showing your transmission to some of the head men in the motor car sales rooms along Michigan avenue, Chicago, selecting those concerns that are now using planetary gearsets. If your invention has merit and is practical they will undoubtedly see its good points and tell the factory about it. Not a few inventions have been sold in this way. One important invention in motor cars was disposed of last week in a very simple way. The man with the patent had carried the papers around with him for over a year, thinking his principle would not work out well. In a heated argument he showed his papers and explained his scheme and two of the men in the party soon interested others and half a dozen of them united and bought

the patent. You cannot sell any patent without either showing the construction drawings or, better still, demonstrating the article. If it costs too much to make a model then extra effort must be expended in explaining and interesting parties in the patent drawings which explain the device.

WARM AIR FOR CARBURETER

Davenport, Ia.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, give its opinion in regard to warm air inlet to the carbureter? In a motor provided with piping from the exhaust, that is, a drum surrounding the exhaust pipe to the intake of the carbureter, is it advisable to leave this in during the summer, or remove it? What is the effect on the smoothness of running, uniformity of mixture and economy of gasoline?—Reader.

It often happens that where a motor is provided with a carbureter pipe for taking the air in from around the exhaust manifold that in hot weather as good power is not obtained as where the air is taken in from a cooler source. In cold weather there is great economy because of taking in the warm air. A similar case is the cutting out of the water to the water-jacket of a carbureter in hot weather, the results of this being more power. A mixture is more uniform when the entering air is at a uniform temperature which is better obtained with air taken from around the exhaust manifold where it is of a uniform temperature than when the air is taken from beneath the car or through the bonnet where its temperature depends largely on local conditions or the nature of the road. As already stated, there is generally more economy of gasoline with air taken in around the exhaust as the higher temperature of it rapidly vaporizes the gasoline and holds it in suspension until it reaches the cylinders. This prevention of condensation is a great economy of fuel and increases the smoothness of running.

KEROSENE FOR CYLINDERS

Chicago, Ill.—Editor Motor Age—Will Motor Age, or some of its readers, tell me if small quantities of kerosene mixed with the gasoline fuel will clean carbon from the cylinders and piston rings? Does kerosene, when used as a fuel, deposit more or less carbon than gasoline? What effect do preparations for removing carbon have on the cylinder walls?—Subscriber.

Small quantities of kerosene mixed with the gasoline and fed through the carbureter will not have any effect in removing the carbon from the cylinder walls or



pistons. Kerosene injected into the cylinders will, however, remove this carbon. The only value coming from using kerosene with the gasoline would be that you could get more power out of the car, but it would be harder to start, due to the presence of the kerosene. When kerosene is used a certain amount of carbon is deposited. No injurious effects are shown on cylinder walls by the use of kerosene, or other preparations, for removing the carbon.

VALUE OF CAR PARTS

Buffalo, N. Y.—Editor Motor Age—Kindly name the advantages and disadvantages of the tubular axle, the I beam axle, full floating rear axle, selective sliding transmission, high and low-tension ignition in magnetos, and in batteries and coils, float feed carbureter.—V. L. Wechter.

The tubular front axle is little used on high powered cars as compared with the I beam axle. Engineers have proven the great strain withstanding qualities of the I beam, it having been used in military cars where excessive strain and rough usage have to be encountered. With present facilities in manufacturing the I beam axle is cheapened in manufacture as there are no jaw ends for carrying the front wheel pivots to be welded in position. On the other hand one of the best makes of American cars uses the tubular front axle with good results. The general conclusion is that either axle can be made sufficiently strong for the utmost exigencies. In the floating rear axle the drive shafts are used only to rotate the back wheels and none of the car weight comes on them all of it being then on the axle housing. Where the drive shafts have to carry part of the car weight there is power lost in the friction between the drive shafts and the axle. Should a drive shaft break in a floating axle it can be withdrawn without taking the axle housing down. In the majority of the floating axles the differential gears can be removed without disassembling the axle housing or even jacking up the car. With a non-floating axle this is not the case. There is less friction in a floating than in a non-floating type of axle. With the selective gearset the driver can shift from third speed to reverse without passing through the second and low speeds. When driving, if the car has to be backed into a curb to turn around, the driver can when turned immediately drop into third or high speed without having to use first or second. This is a great convenience in driving, and besides saving time and driver's energy it saves the gears of the set. The selective set is quicker and easier to handle on the road. In high-tension ignition with magneto more power is obtained than in a high tension system with batteries. With the magneto the trouble of having batteries recharged is eliminated and the magneto gives a very hot spark, a hotter one than can be obtained with the battery unless

the battery spark is given extra advance. Magnetos of this class give very little trouble at the present time, although a year or so ago many of the high-tension magnetos gave considerable trouble. With a high-tension magneto a dash coil is not needed or is a distributor on the motor, the magneto having its own distributor. In low-tension ignition there are none of the troubles of insulation, there are no vibrating coils and the magneto is a very simple device. The wiring is very simple also. The make-and-break parts carried on each cylinder require attention and must be kept properly adjusted. With this system there is not any sooting of spark plug, and you have a spark that will practically ignite any mixture. There is more expense in building a motor with make-and-break parts than one designed for high-tension ignition. Low-tension ignition has not made as much progress during the last few years as was expected, but those who have used it are continuing to use it. The float feed carbureter is practically the only one used today on motor cars in America, although one or two inventors have brought out check valve type in which the float is eliminated and one maker uses a pump to force the gasoline from the tank to the spraying nozzle. The float is a very effective feeder and is simple and automatic. It is cheaper than the pump system and gives very satisfactory results.

WIDTH OF SPARK PLUG GAP

Somerville, Mass.—Editor Motor Age—Why will spark plugs miss fire with a gap of 1-64 inch and fire regularly with a 1-32-inch spark gap?—A. C. G.

Do you mean why does the spark plug fire, or why does the cylinder in which it is located fail to fire its charge when the spark plug in it has the smaller gap? In the latter case, it was a case of the mixture and not of the spark plug alone. In other words, the spark caused by the current bridging the smaller gap is not sufficient to fire the mixture in the cylinder, whereas the 1-32-inch spark is. It must also be borne in mind, that the spark which actually takes place in the cylinder is nothing like as large as that which is seen when the current is caused to bridge the gap of the plug in the open air. This is because of the greater resistance of the mixture in the cylinder, due to the increased compression. The spark which occurs when the points are only 1-64 inch apart, may appear strong and sufficient in the open air, but it is much weaker when subjected to the compression in the cylinder, and is probably reduced to a point where it does not raise the temperature

of the gases immediately surrounding it to a point where they will ignite. The higher the compression within a cylinder the greater the resistance to the passage of the electric spark or the higher the voltage needed in the circuit.

CAUSES MOTORS TO KNOCK

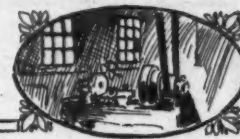
Freeport, Ill.—Editor Motor Age—I have a model F, 1907 Buick and in testing the cylinders I find that by holding down the contact point on the dash coil I can tell which cylinder is missing. In doing this the back cylinder works slower than the front one, although when running the motor works well and does not miss. Should the motor act like that? Everything seems to be tight and the coil is in good condition. In going up hill the motor pounds considerably; retarding the spark prevents this somewhat. Will carbon in the cylinder cause this pound? I do not think there is sufficient carbon in the cylinders to cause the pounding as, after a run, I clean the cylinders with kerosene while the motor is hot. Do you recommend kerosene for removing carbon from the cylinders? In going up grade I find the compression leaks just above the crankcase. An aluminum plate rests on top of a brass plate and between these plates there is no packing and never was, and this is where the leak occurs. Will Motor Age tell me how this can be remedied?—Oscar Kram.

In testing two cylinders by holding down the contact point on the dash coil you can discover which cylinder is missing, and in doing this the back cylinder should not work slower than the front one. There may be several reasons. The exhaust valve on the back cylinder may need grinding. If it is badly pitted, there will be a little loss of compression, which will result in a slower combustion and consequently slower operation of the back cylinder. The spark plug may not be in tight, the intake manifold may be a little loose at that cylinder. The motor pounding when going up a hill can be prevented by retarding the spark, but this pounding may be due to a loose connecting rod. It may be that the spark control has changed slightly so that the spark is advanced more than what you imagine it is by the spark control lever. Carbon in a cylinder will cause a pound only when pre-ignition takes place, but this should not occur especially on a hill and would be noted on level stretches. Kerosene is a good liquid for removing carbon from cylinders. It should be injected in the evening and left in during the night. The compression leak in the crankcase, which you referred to, may be due to the compression relief cock in the bottom of the crankcase being stopped or plugged up. There should not be any packing between the aluminum and glass plate you speak of, and the leak between these will undoubtedly cease when the relief cock referred to is in working order.





Motor Car Shop Kinks

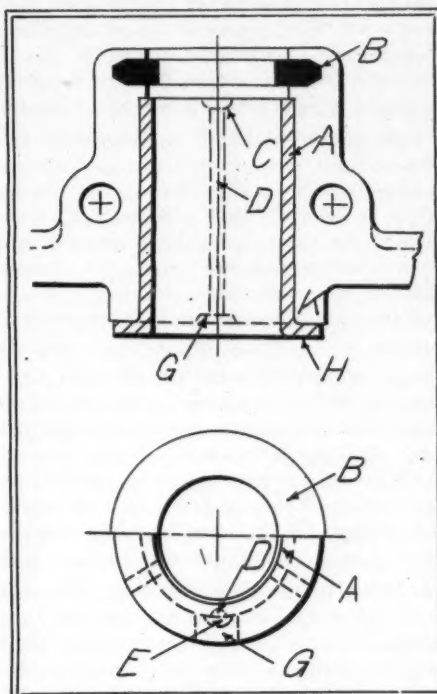


GASOLINE PIPE CONNECTIONS

As a rule, all threaded connections in the gasoline line should be soldered, as this is the only way to insure their permanency. Occasionally, however, it is inconvenient or undesirable to solder such a connection, and in that case other means must be taken to insure its tightness. Dry soap is frequently used for such joints. A better substance, however, is a hard paste of soap and fine emery. The emery cuts the threads and permits the joint to be screwed together further and tighter than soap alone.

FILLETTING SQUARED END SHAFTS

A shaft to which a gear is attached by a squared or hexagonal section at one end is obviously weaker at that end than elsewhere, unless the end has been enlarged so that the diameter over the flats is equal to the diameter of the round part of the shaft. In some cars this precaution has been overlooked, and the flats are milled off from the round contour of the shaft, which is thereby reduced in section. Among the parts in which this construction will be found are the live axle shafts, the differential shafts of a chain-driven car, the bevel pinion shaft of a live-axle car, and the shafts to which the propeller shaft universal joints are attached. A shaft containing no more than 40 points of carbon, or a nickel or chrome nickel steel shaft, will twist noticeably before it breaks, provided it has a chance. If the rear axle is of the floating type, the squared ends of the shaft will be a loose fit in the differential gears and the wheel hubs, and there will probably be $\frac{1}{8}$ inch or more where the squared portion adjoins the round, where this twist will appear. If at this point there is a well-defined shoulder, the fracture when it comes will take place at the shoulder, and it will probably occur a



OIL GROOVES FOR BEARINGS

good deal sooner than if there were an easy fillet B connecting the round and squared portions. In case the shaft is hexagonal and a taper fit in the gear, there is a chance for the same thing to occur, since the gear is not expected to fetch up against the shoulder at the end of the hexagonal portion. D is the hexagonal shaft with the fillet used. It is a good idea when a car is overhauled to examine shafts such as these to see whether or not there are signs of twisting. If there are, it will be policy to replace the shafts without waiting for the inevitable fracture to occur. If there is no sign of twisting, it will be extremely easy to help the chance of durability by putting fillets in place of the shoulders. This may be done on an emery wheel if the shoulder is small, or in a shaper or milling machine if the shaft is squared. The illustrations show good and bad forms of squared and hexagonal ends.

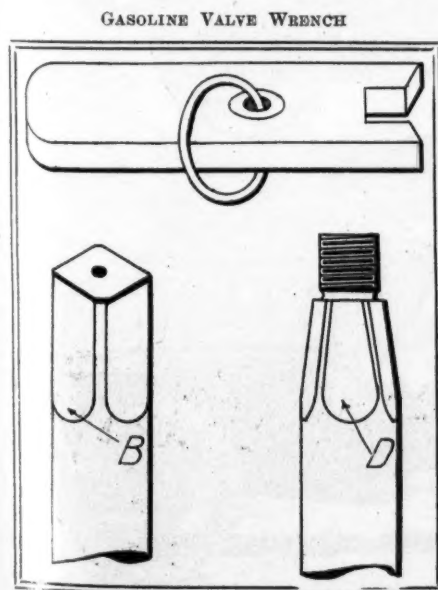
RETURN OIL GROOVES

Two illustrations show a differential sleeve bearing recently under observation. Beyond the end of the bushing A was a groove into which a split felt ring B was compressed to prevent the escape of oil. At the end of the lower half of the split bushing was a notch C about $\frac{1}{8}$ inch by $\frac{1}{8}$ inch, by way of which it was evidently the intention for oil working to that end of the bearing to return to the gearcase. This excellent idea of the designer had in some manner gone astray, for the return oil groove D, which by the way was cut in the under portion of the bushing itself, was hardly more

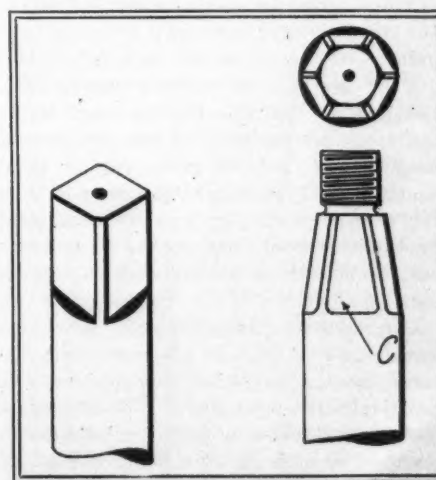
than $\frac{1}{8}$ inch wide and 1-32 inch deep, certainly by no means large enough to afford a passage for the thick oil commonly used in gear cases, since capillary action alone would have prevented the oil from flowing, save under pressure much greater than could possibly arise. Worse than that, there was no outlet whatever into the gearcase. The inner end of the bushing was flanged at H and neither that flange nor the seat K against which it bore was recessed in the slightest. This bearing was considerably cut, and a couple of paper liners had to be put under the lower half of the bushing. In order to give a sufficient passage for the oil, a groove E was chipped in the seat under the bushing, and to prevent the paper liners, which now separated the upper and lower grooves, from retarding the flow of oil, they were cut away at the grooves. Since this divided them into separate right and left portions, they were shellacked to the bushing to keep them from shifting, and the bushing itself was secured by brass dowel pins. An outlet was chipped in the seat at G. If this treatment had not been applied, the oil reaching the outer portion of the bearing could not have escaped except past the felt washer B and it would have accumulated metal particles and started cutting of the shaft and bushing.

GASOLINE VALVE WRENCH

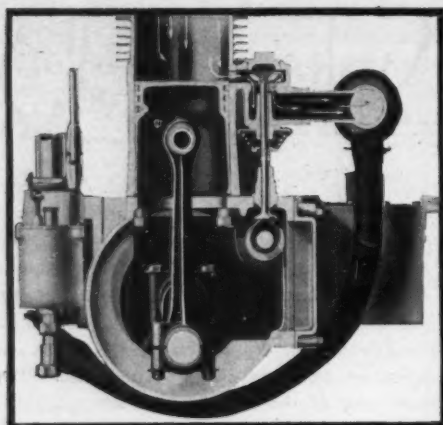
One illustration shows a handy wrench, which can be made in a few minutes from a scrap of $\frac{1}{8}$ or $\frac{1}{16}$ -inch flat iron stock, for gasoline valves having squared stems unprovided with a handle or wheel for turning them. By shaping the end as illustrated, the wrench is easily guided to the correct position on the stem, even when the latter cannot be seen and the valve has to be closed by feeling only. A strong string or bit of chain may be run through the wire ring and secured with a few inches of slack to the valve itself, thus making the wrench always handy when it is wanted.



GOOD SQUARE AND HEX ENDS



BAD SQUARE AND HEX ENDS



FRANKLIN HOT AIR INTAKE

FRANKLIN cars for 1909 are in three models: 18, 28 and 42-horsepower, the last mentioned a six-cylinder type. In a cursory inspection of these models, designated, respectively, G, D and H, not a few important changes are noted, while the accepted Franklin principles are retained. Chiefly noticeable in the operations is the employment, in all models, of a single ignition system in which the current producer is a high-tension Bosch magneto, the installation of which has resulted in considerable simplification of the car. The battery box on the running board is gone; so is the quadruple coil on the dash; so is the timer on the front end of the camshaft, and the wiring is very noticeably shortened. The governor heretofore used and exerting its influence on the carbureter throttle, has been dropped, the reason for this being that improvements in carbureter design and control have rendered its presence unnecessary. Added to these cardinal operations is the addition of the following parts: A mud-apron extending between the frame members, in front of the bonnets on models D and H, prevents mud and dirt raised by the front wheels from reaching the motor; model G, the 18-horsepower car, besides given a more mature aspect by the addition of a magneto, also will carry a cooling fan in front of the forward cylinder for the first time; Vanadium steel is now used in the valve springs; an emergency auxiliary gasoline compartment is fitted in the regular tank whereby from 1 to 2 gallons is kept in reserve and before this can be drawn upon a three-way cock at the end of the driver's seat has to be operated, the positions of this tap permitting of drawing fuel from the regular tank, shutting it off entirely or drawing it from the auxiliary supply; a new mechanical feed oiler is fitted; and, on the six-cylinder car, use is made of an improved motor support.

For the 1909 season Franklin cars carry three sizes of motors all employing the same cooling facilities and designed on practically the same lines. The cooling of different cylinders by additional flanges is resorted to with the aim of having all of the cylinders working at as uniform tem-

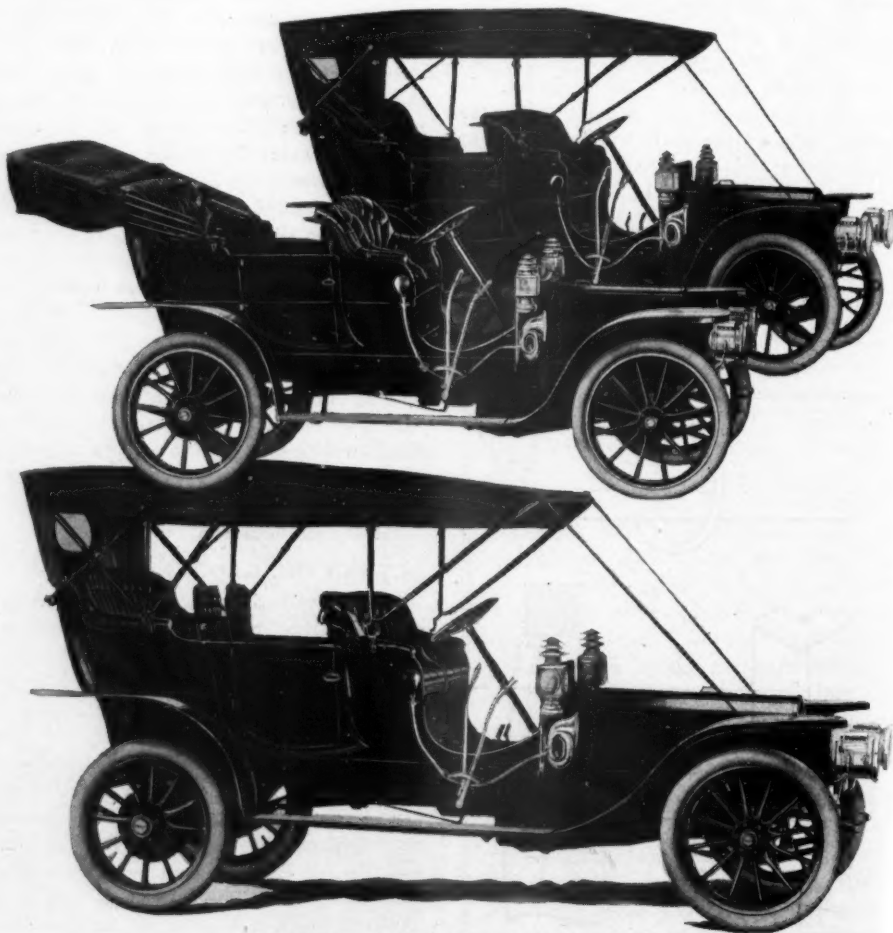
Recent Motor Car Development

perature as possible irrespective of their position. This system is not new, but represents one of the fixed principles of construction the company follows. Among the other retained features is the concentric valve employed for the first time this season and which are continued without change. The wood frames, the tubular front axles, the full elliptic springs in front and rear, the multiple disk clutch, the selective gearset in the D and H models, the employment of shaft drive in all three types, braking through rear wheel drums and a transmission band and the employment of Timken nickel steel bearings in the front wheels are a few of the many Franklin features retained and which the motoring public is familiar with.

The model G car, 18-horsepower, carries four $3\frac{3}{8}$ by 4-inch cylinders, has its wheelbase increased $1\frac{1}{2}$ inch, bringing it up to 91 $\frac{1}{2}$ inches, its 30-inch wheels have been increased to 32 inches, carrying 3 and $3\frac{1}{2}$ -inch tires, but it continues to carry the progressive gearset, whereas the other bigger brothers have the selective. Increasing the cylinder bore from $3\frac{1}{4}$ to $3\frac{3}{8}$ and the stroke from $3\frac{1}{4}$ to 4 inches also has added materially to the power of this little car without increasing its weight

very much. This engine is slightly slower running than those in the D and H cars. The magneto ignition is provided with a fixed spark, although a variable spark is provided on the other two models. In addition to the regular body styles this car is built with a brougham body well suited for physician duty and with a landaulet body excellently suited for around-town work.

Model D, the other four-cylinder machine with four $4\frac{1}{4}$ by 4-inch cylinders, is built in standard body styles, but uses 36-inch wheels where formerly 34-inch sizes were employed. Type H, the six-cylinder car with cylinders of the same size as the D, is much the same in general make up as it is this year, its wheels, wheelbase and other standard parts not having undergone any increasing process. The auxiliary seats in the tonneau, which convert this machine into a seven-passenger vehicle, are of the reversible Pullman type, and this car carries a worm and gear steering gear for the first time, having previously, like the other models, used a bevel-gear type of steering gear. The tonneau has a false bottom, which covers the bolts and attaching irons. On top of this bottom is placed a linoleum cover, in addition to which is a



TWO VIEWS OF FRANKLIN D AND MODEL H

Three 1909 Franklin Models

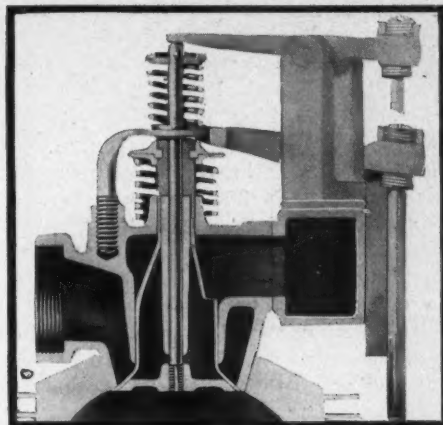
heavy linoleum mat, leather bound and held in place by catches. The running boards are covered with the same material.

The change from double or battery and magneto ignition to single high-tension magneto is a very interesting feature of the 1909 models. On the model H the magneto's action is controlled by an automatic governor with expanding arms pressing outward against the magneto's balance wheel, thus obviating the possibility of back kick. The method of wiring is also worthy of mention, the wires passing through a conduit so constructed as to avoid the chafing of wires and short circuiting.

With the new engine construction the front cheek piece can be removed without disturbing the camshaft, or the camshaft may be taken out without interfering with the cheek piece. The starting crank in its attachment to the crankshaft has been made waterproof, and is held in place by a leather stirrup.

The concentric valve and dome head cylinders are two features used exclusively on the Franklin motors, and while having made their appearance on the 1908 models, have after a season's use shown themselves worthy of continuation.

The intake and exhaust valves are concentric, or, in other words, have the same center and take up the same space so far as using the top of the cylinder is concerned. This method of construction makes possible the using of valves having twice the area as where separate intake and exhaust valves are used. This form of valve and the dome head cylinder fit each other naturally, leaving, as they do, no corner for dead gases to lurk in, thus making the exhaust more complete. The area of the cylinder's inner surface through its shape is reduced, while the external or heat radiating surface remains the same. Other advantages of the concentric valve and the dome head cylinder are that the opening from the suction pipe to the cylinder is more direct. A greater amount of gas can enter because of the decreased friction in the passage. The suction valve is also kept cooler by its not coming into direct contact with the cylinder head. The gas expands less on entering the cylinder and a more concentrated charge can enter. There is less loss of heat in the cylinder, the heat expressing itself more completely in power. It increases cooling ability by adding to the external surface of the cylinder and decreasing the internal



FRANKLIN CONCENTRIC VALVES

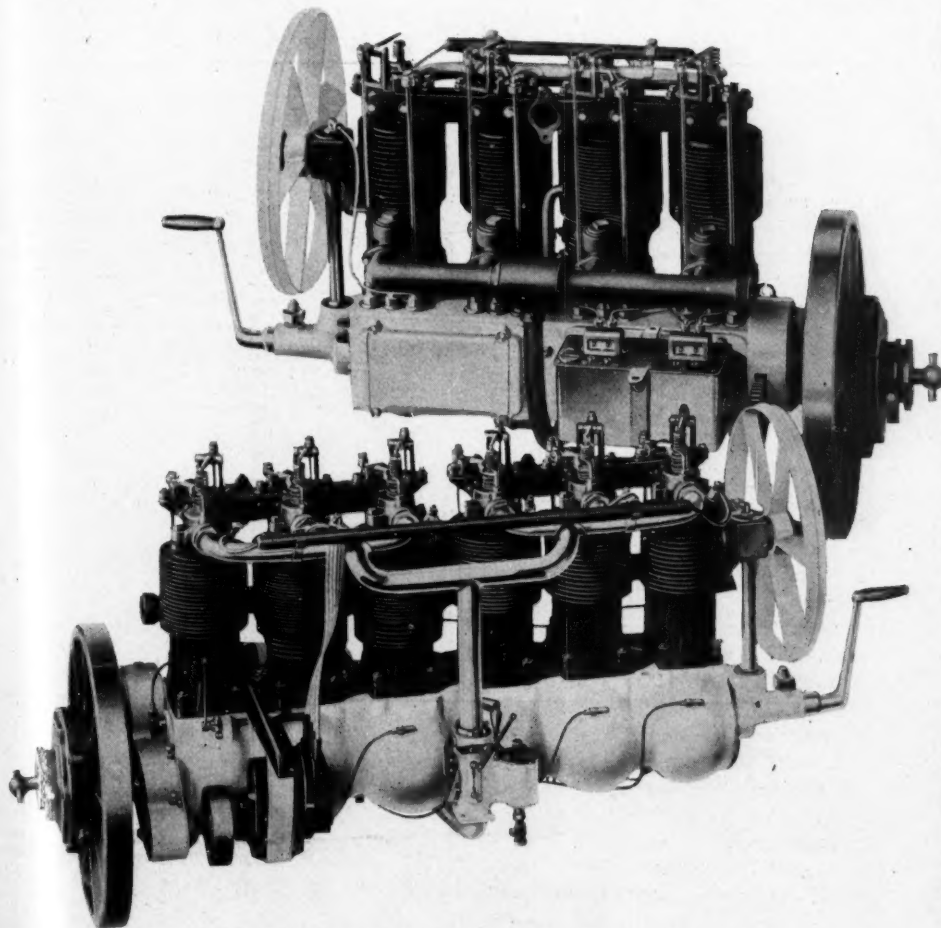
surface of the cylinder and cylinder head.

The method of suspending the type H engine is somewhat different from that used during the past season, the cross rails being made of angle steel, which also support the magneto and oiler in a manner greatly reducing vibration and making removal or adjustment easy.

A double heat accumulator, which is the method of securing warm air for the carburetor is a new feature on the six-cylinder motor. This is accomplished by encircling the auxiliary pipe with a copper jacket and passing the heat so accumulated through the air intake pipe underneath the engine base to the carburetor. The copper case used on this motor is in addition to the regular steel warm air collector used on all of the other Franklin engines. With the adoption of this device a considerable claimed increase in the carburetor efficiency has been brought about by the mixing of warm air in such volume as may be required by the varying conditions.

A change in the style of the oiler and method of carrying is such as would seem to add to the convenience of filling the oiler and results obtained. The Hancock positive gear-driven oiler of various feeds, depending on the size of the engine, is used on all models, being placed directly against the engine base where the oil is, through the warmth expelled from the engine, kept at all times in the proper condition for the most satisfactory lubrication. Another point is the accessibility of the oiler, through its location, it being possible if found necessary, to remove the oiler without inconvenience or the disturbing of any other part of the motor. Free space in and about the oiler also admits of easy and quick adjustment.

All the 1909 engines are equipped with a transverse slotted oil baffle plate, used in connection with the splash system of oiling, the pistons in their action forming a suction or natural pump drawing up the oil and spraying it directly on the points required, causing a more even lubrication than through the ordinary splash system, which distributes the oil without regard to the exact points requiring lubrication and depending upon the operation of the en-



MOTORS EMPLOYED IN FRANKLIN CARS, MODELS D AND H

gine for working the oil around to these points.

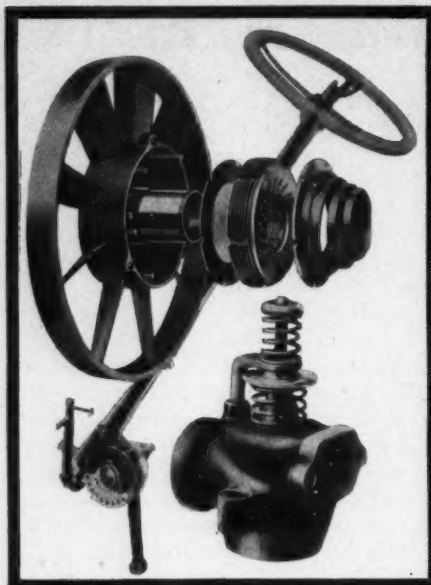
By a change in the position of the carbureter the connectionless intake pipe has been altered, making a more direct passage for the gases into the cylinder. The pipe being of spun brass is so constructed as to make impossible a change in the richness of the mixture through air leaks. The auxiliary exhaust is continued, in which the valves located at the base of the cylinder dispel 71 per cent of the burnt gases immediately on the completion of the power stroke, the remaining 29 per cent passing out through the main exhaust. These valves are mechanically operated by the camshaft in a similar manner to the regular exhaust valve.

By the shape of the hyperbolical cams and a rawhide gear the noise of valve action is greatly reduced.

The front air fan, which is used on all motors this year, is so shaped as to form a helix and throws a great volume of air for the power expended. This fan is driven by bevel gear and shaft connected with the front end of the crankshaft. The fan is made of aluminum and is held in place by a coil spring and friction disks.

The carbureter is of the automatic float feed type, the supply of gasoline being controlled by a T handle connected with the valve and passing through the dash within easy reach of the operator. There is also a small primer by which the proper quantity of gasoline required for starting may be readily secured. The throttle valve and by-pass valve work in such unison as to insure a perfect mixture of gasoline and air at all times. The working of these valves, the securing of the proper amount of warm air and the entire absence of delicate springs combine to bring about a most uniform carbureter operation under varying conditions.

The clutch is of the multiple disk type,



STEERING GEAR, CLUTCH AND VALVE CAGE

the disks being made of phosphor bronze and steel alternated. The phosphor bronze disks are prevented from rotating by bolts, but are free to move laterally by friction gradually exerted through a spring. The disks are thus made to revolve and pressing out the oil are brought into action with an entire absence of grabbing.

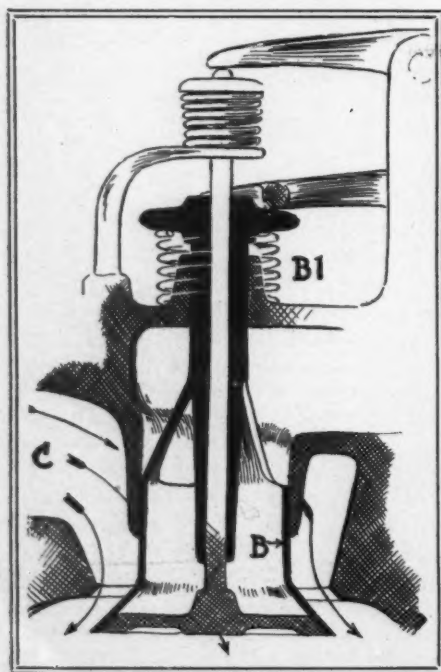
Two styles of change gear lever arrangement are used, the selective type being used on all models except the 18-horsepower model G, these being equipped with the self-finding gear shift. The selective type is so constructed as to be entirely free from lost motion, and is positive in its action. Whenever the lever is brought to a vertical position it automatically sets into a neutral position by means of spring tension. The absence of the H guiding plate, used as a rule on the selective type transmission, is omitted. For low gear it is only necessary to press outward on the lever and back, for intermediate the lever is pressed inward and forward, for high speed a similar movement with a backward pull is all that is required. Operation between change gear lever and transmission is direct, all intermediate complications being entirely done away with. Through the arrangement of gears and operating levers it is possible to pass from one gear into another without disengaging the clutch, therefore simplifying and making quite unnecessary the noisy changing of gears.

Many alterations are noted in the running gear. The transmission boot has been removed, and by the lengthening out of the engine boot and the absence of joints and its close fitting removes entirely the possibility of mud being dashed onto the engine. The mudguards on all models have been strengthened by adding reinforcements which reduce vibration. The front guards are made with flanges so formed as to prevent the mud and water thrown by the front wheels being splashed from underneath the guard. Some

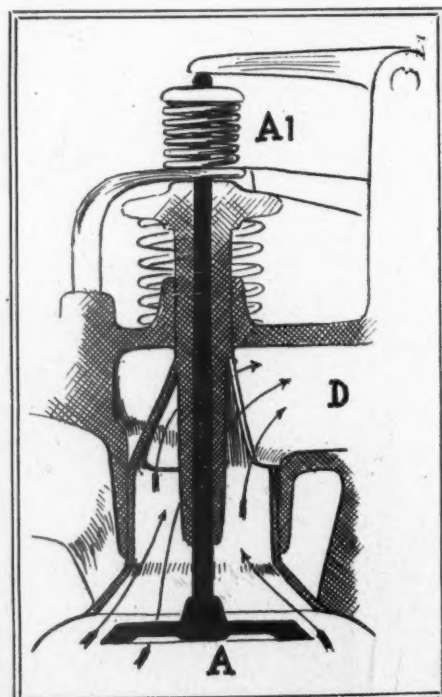
changes in the design of the runabout front and rear guards have also been made conforming more closely to this type of car than those heretofore used. Brakes on the 1909 models, while not being different in design from those used this season, are placed and fitted as to give increased braking power, the braking surface on both the rear wheels and transmission being great in proportion to the weight of the machine. An anti-rattling device which holds the brakes rigidly in position when not set is used. A slight change in the method of casing the differential gear has been made, the pins of the casing having been changed from bolts and nuts to rivets, making a more positive and stronger construction. The reinforced steel angle frame sheet metal construction is used in the body of all the Franklin cars this year, making possible a light yet strong body, the doors and pillar posts being made of cast aluminum so constructed as to render warping difficult.

All models are upholstered in hand-buffed straight-grain leather, blue leather being used on the royal blue cars and red on the runabouts finished in this color. The upholstery on the D and H runabouts is tufted similar to that on the touring cars, while on the G runabout it is plain, with roll along the edge of the back and across the front of the seat cushion. The dash is neat, the coil box being done away with, and the oiler placed underneath the hood next to the engine base, there is nothing to mar its appearance. On the models D and G it is painted the same color as the other body parts, on the model H it is made of mahogany.

Through the set spark arrangement on the model G a spark lever is necessary, the throttle being all that is required. On the D and H models, however, a spark controlling lever is used.



INTAKE VALVE B, OPEN



EXHAUST VALVE A, OPEN

WHITE 1909 STEAMERS IN TWO SIZES

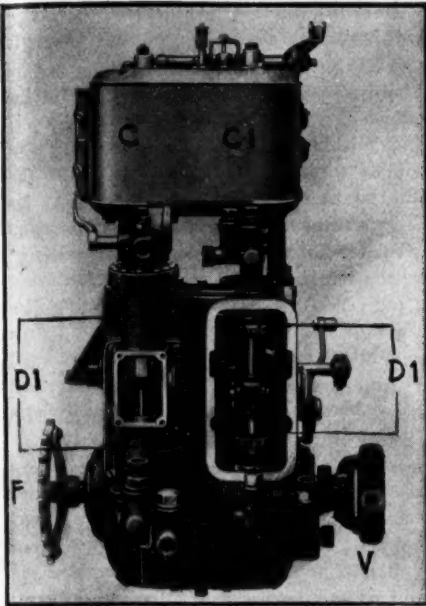


FIG. 1—WHITE ENGINE

WHITE steam cars for 1909 will be in two models—M, a seven-passenger 40-horsepower machine, with 122-inch wheelbase, 36 by 4 and 5-inch tires, tubular front axle, armored wood frame, semi-elliptic springs, 40 and 55 inches front and rear respectively; internal and external brakes on the rear hubs, fuel tank under the chassis at the rear and water tank under the footboard. The other model, O, designated the little car, is a 20-horsepower five-passenger steamer, with 104-inch wheelbase, 32 by 3½-inch tires, pressed steel frame, I-beam front axle, 37 and 45-inch semi-elliptic springs, two sets of rear hub brakes and, like its bigger brother, it has the fuel tank at the rear and a water tank under the footboard. The announcement concerning the new models was made this week by the White company.

Aside from the differences herein shown, as well as the difference in engine size, the two cars are alike; fashioned along identical lines, the same systems in vogue in each, the same type of bearings fitted to the different parts and the same material with careful workmanship on each and every part. The engine in both is of the compound type, consisting of two vertical cylinders, in each of which is a double-acting piston. In one-cylinder high-pressure steam is used; in the other low-pressure. In the model M 40-horsepower car, the low-pressure cylinder has a 6-inch diameter, the high-pressure one a 3½-inch diameter, both having a 4½-inch stroke. In the model O 20-horsepower machine the high and low-pressure cylinders have 2½ and 4¼-inch diameters, respectively, and a 3-inch stroke.

Joy Valve Action

The great mechanical change of the White cars for 1909 is in the motors and in this it is confined to the introduction of

the Joy valve motion, which supersedes the Stephenson valve motion heretofore used in White cars. The advantages gained by this change are several, one of the greatest being a most pronounced simplification in the working parts of the motor, which is evidenced by the illustrations of the engine and parts. A short analysis of the engine parts will reveal this. The new crankshaft C is a one-piece affair, whereas heretofore, with the employment of the Stephenson valve action, a five-piece crankshaft was employed. This shaft has but two main annular ball bearings B, which carry the shaft in the crankcase, and on the lower ends of the connecting rods are other annular ball bearings H, these four being the only bearings of the crankshaft. Previous to this 1909 model, the White steamer had twelve crankshaft bearings, so that the introduction of the Joy valve motion and other motor refinements has simplified this portion of the engine 300 per cent. In the assembly illustration the main bearings B of the crankshaft are secured in place by the lock nut and lock washers N. The connecting rods R—one-piece forgings—have eyeholes K, to which attaches the Joy valve action, which will be noted in another illustration. In order to avoid a dead center, the throws T and T1 of the crankshaft are at 90 degrees to each other, and W is the counter or balancing weight, which attaches to the crankshaft at W1. Apart from the one-piece crankshaft for 1909 is the great reduction in length, the shaft being quite easily 20 per cent shorter than heretofore, which means a corresponding reduction in the length of the motor.

Symmetry of Engine

A further analysis of the exterior of the engine before looking at the Joy valve motion in detail may be in order. In Fig. 1—which is the left-hand side of the engine with the covers removed to show the pump—the steam cylinders are enclosed at C and C1 in the upper part of the illustration. D shows the two water pumps and D1 the air pump at the top for maintaining pressure on the gasoline tank and at the bottom the condenser pump for returning the water from the condenser—which corresponds with the radiator of

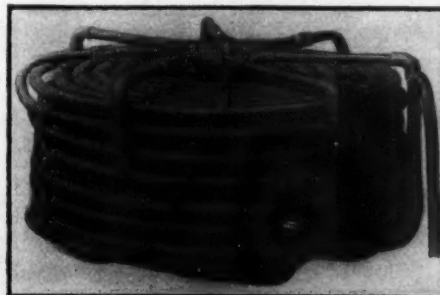


FIG. 3—WHITE GENERATOR

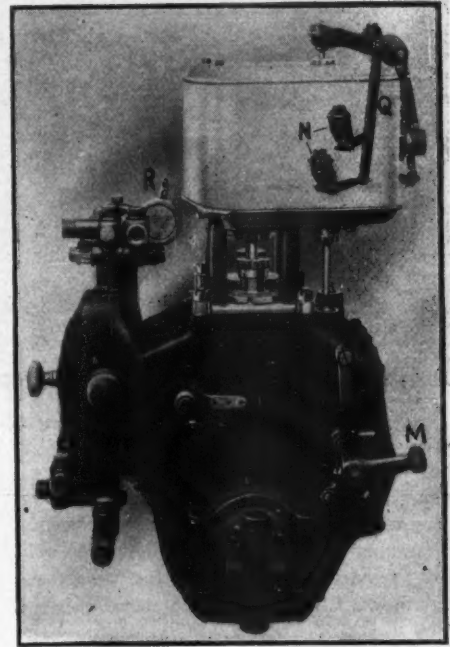


FIG. 2—END VIEW OF MOTOR

a gasoline car—to the water tank. The sprocket F on the front end of the crankshaft is for driving the fan. This sprocket connects by chain with a smaller sprocket on the fanshaft, so that the fan revolves faster than the crankshaft. The fan is not rigidly fastened to its shaft, but is connected by a ratchet device, which permits it to run ahead of the shaft, so that when the engine is stopped or slowed down the fan continues to run as long as its momentum is retained, thereby preventing any backlash on the chain. A ready adjustment of the chain tension is achieved by mounting the fanshaft on eccentrics, so that the simple altering by turning of these eccentrics changes the adjustment. At the lower right is the universal joint V by which the crankshaft is coupled with the driving shaft of the rear axle.

In the end view of the motor Fig. 2 two or three other features appear. A is the small rocker arm by which the oiler on the dash is driven; M serves for the connection whereby the reverse and valve motion is controlled; N are relief valves on the cylinders for getting rid of any water which may be in the cylinders when starting the engine cold. These relief valves, as well as those on the other cylinder, are through a linkage Q, opened momentarily by a lever on the dash before admitting steam to the cylinders, so that the entering steam removes the water. R is the screened opening through which the air used for forcing the gasoline is taken in by the pump.

Analysis of Joy Motion

The reader is now introduced to the moving parts of the engine, which are grouped in illustration Fig. 6, which shows

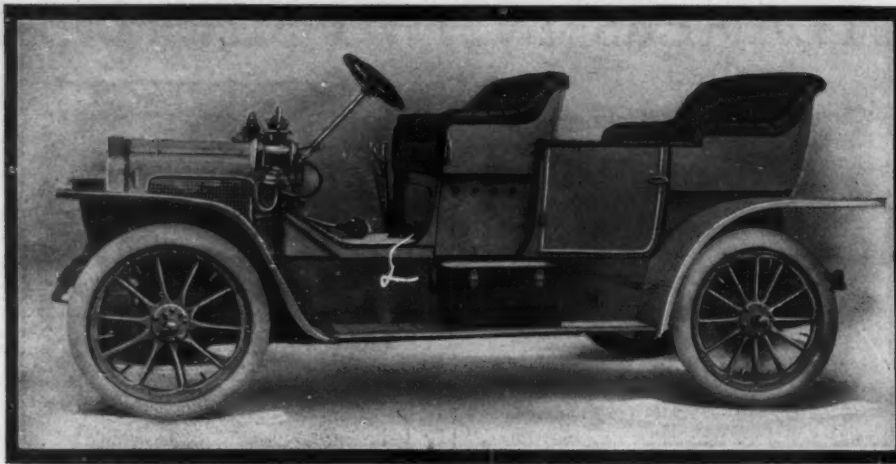


FIG. 4—WHITE STEAM CAR, MODEL O

the high-pressure piston PH, the low-pressure piston PL, the high-pressure valve VH—which governs the entrance of steam, as well as the exit of the exhaust to the high-pressure cylinder—and the low-pressure valve VL, which performs similar functions for its cylinder. Again C represents the crankshaft, R the connecting rods, CH the cross heads and E the pump rocker shaft on the end of which is the small arm A for driving the oiler and which was observed in the end view of the motor. D shows the attachment for the water pump and D1 for the air and condenser pumps, both of which were noted in the previous motor illustration. In this illustration, it will be observed that the linkage J of the Joy system is carried on the two connecting rods R, and that the valve connecting rods V2 and the rod V1 operate from this system, the end of the arm J attaching to a T piece W, which operates in the guides Z, so that by tilting the valve guide G the engine is reversed.

Herein is shown the great White change for the coming season, which includes the driving of the valve motion as well as the four pumps and the oiler from the two connecting rods. As steam is admitted to the center of the valve and exhausts at the end, which reduces the pressure on the valve stuffing boxes to that of the exhaust from the respective cylinders.

The crankcase of the engine is made in one piece but ready access may be had to all parts within by the removal of the side and bottom plates, and the crankshaft may be taken out through either end. The new engine permits of a symmetrical arrangement of the necessary piping and everything under the bonnet is accessible. Stuffing boxes are fitted to the upper end of the slides in which the crossheads travel, so that no oil may be splattered out of the crankcase. There are throughout provisions for keeping everything within the crankcase well lubricated.

The Steam Cut-Offs

The engine is so adjusted that it runs normally on cut-off—that is, the admission of steam to each cylinder is stopped before the end of the stroke and the steam works

expansively for the balance of the stroke. There are four notches regulating the steam cut-off, graduated at 100, 75, 50 and 25 per cent. In the 100 per cent notch steam follows the piston the entire length of its stroke, whereas in the other notches but three-quarters, one-half and one-quarter of the stroke. In starting the engine, the pushing of the simpling pedal allows the engine to take steam during the full stroke. There is also a cut-off pedal which, when pressed, produces the same results. This cut-off pedal is used only when slow, hard pulling is required, as in climbing particularly steep grades or running over very heavy roads. An interesting feature of the Joy valve mechanism is that, when the cut-off is changed, the lead of the valves is unchanged and the engine thus runs more smoothly on cut-off than was possible with the Stephenson valves.

The engine is supported on two cross-members of the frame, which are so placed

that the entire weight of the engine is behind the front axle. The engine driving shaft is horizontal and, as there is neither clutch nor transmission gear, the drive is direct from the engine through the driving shaft to the rear axle.

The exhaust pipe from the engine to the condenser is located on the right-hand side. Within this exhaust pipe there is a coil of piping, through which the water from the pumps circulates on its way to the generator. This arrangement thus constitutes a compact feed-water heater, which performs the double function of heating the feed-water and of aiding the process of condensation.

The White Generator

The generator is of the same construction as in former years. For those who are not familiar with this device it may be said that the White generator consists Fig. 3, of a series of coils of steel tubing, placed one above the other, and connected in series. If the whole were to be unwound and straightened out the generator would be seen to be made of a single long piece of tubing. In operation the water is pumped into the upper coil and steam issues from the lower coil. There is but a very small quantity of water in the generator at any given moment—in the larger car the total capacity of the generator is less than $\frac{1}{2}$ cubic foot—but the process of making steam is so rapid that steam is always available in the quantity which the running conditions may make necessary. In the model M and model O cars the generator tubing is of $\frac{1}{2}$ inch internal diameter, but the length of tubing used differs, of course, for the two models.

The Automatic Regulation

The system of regulation, whereby the temperature and pressure of the steam are kept constant without in any way engag-

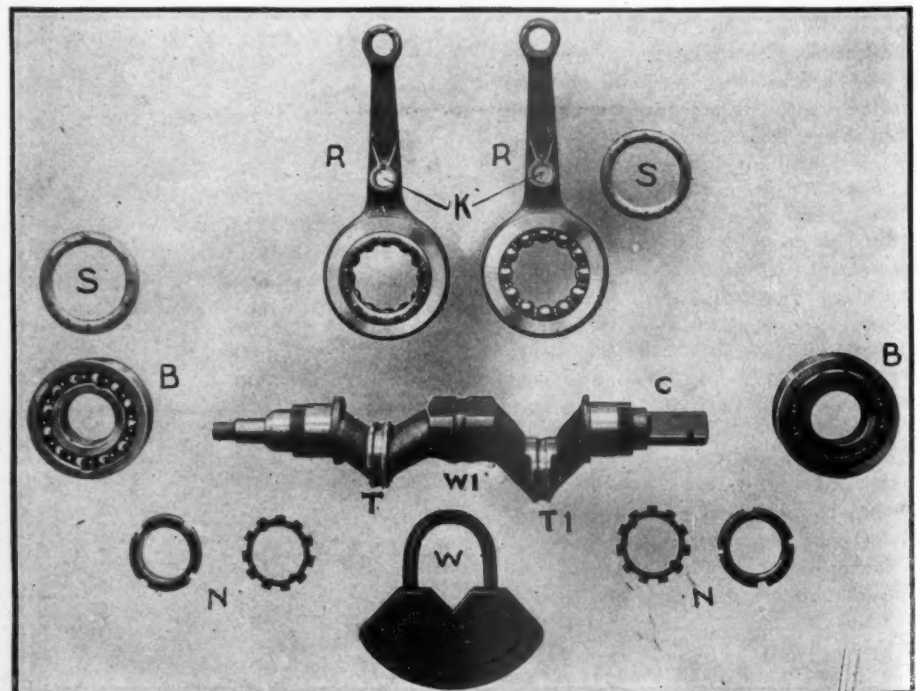


FIG. 5—MOTOR ASSEMBLY IN WHITE ENGINE

ing or requiring the attention of the operator, is the same in the new models as in the 1908 machines. To describe briefly the scheme of regulating, the supply of water to the generator and the supply of fuel to the burner are so controlled as always to be in perfect balance with each other. As soon as the steam pressure rises appreciably above the normal working pressure, both supplies are at once cut off. As soon as the pressure drops at all below the normal, both water and fuel are supplied in proportionate quantities. The devices which regulate the fuel supply and the water supply are positive in their action, contain no delicate parts and depend for their operation only on temperature and pressure, forces which are absolute in their behavior. External atmospheric or climatic conditions in no way influence the action of the regulating devices, it is declared.

STEARNS SHOWS PROGRESS

A new model for the ensuing year has been announced by the F. B. Stearns Co., Cleveland, O. It will be a chassis well suited to town car uses, although having rather more motor power than is usually found in the conventional town car chassis. It is of the four-cylinder type, wheel base 116 inches, and, in a general way, is no more nor less than a size reduction of the 30-60-horsepower Stearns model. Annular ball bearings are used throughout; it has the Stearns multiple-jet carburetor and all the other features of design which have contributed so much to Stearns success are to be found in this model.

In addition to this town car chassis—which will mount roadster, touring and laundalet bodies—there will be a continuation of the 30-60-horsepower four-cylinder chassis and the 90-horsepower six-cylinder chassis. A few days ago the Stearns company accepted plans and awarded contracts for a material increase to factory buildings; also, there was awarded a large machine tool contract in preparation for the coming season.

For 2 years a day and a night force has been kept busy at the Stearns' plant. For 2 years the output has been oversold. Most of the Stearns' cars in that time have been marketed in the larger eastern cities, although well represented in the west.

A PUNCTURELESS TIRE

B. F. Fry, 419 South Fifth street, La Crosse, Wis., has invented a punctureless motor car tire that is very novel yet serviceable. The principal part of the tire is steel. The outer circumference is made of steel, not unlike a common stovepipe in shape. The seam is unsealed, to close like springs under pressure. Inside there are a number of sections, each containing a spring like a two-leaf clover, which receive the impact and transmit it to the other sections with equal strain. Running transversely through the circuit of springs, in the form of hoops of live steel, are five springs fitting into the lobes of the clover-

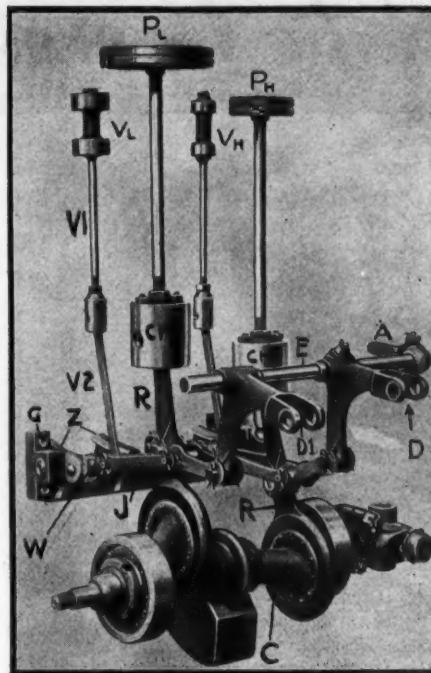


FIG. 6—JOY VALVE MOTION

leaf spring. One end is pointed and the other has a receptacle, permitting the band to give and take with each pressure. The steel outer circumference is covered with tough felt protected by canvas.

GRANT ROLLER BEARING

Motorists will be interested in the new Grant roller bearing recently produced by the Standard Roller Bearing Co., Philadelphia. This bearing has conical or tapered rollers, but is improved in several respects over the former Grant bearing, which was the first conical roller bearing placed on the motor market, it being claimed that it is the original from which all other tapered roller bearings of this class have been copied. The new bearing has solid rollers, with races and cones made of special steel, with the temper drawn, so that they are very tough and will not chip or break under the most severe service. The cage or retainer holding the rolls is made of the same general type as that used by this company for many years on its standard journal roller bearing; it consists of individual sockets or races, in

which the ends of the rolls rest, and is made of solid steel with the two ends securely riveted together by their special electric riveter, giving the strongest form of cage or retainer that can be devised; the hot riveting making the cage substantially solid or one-piece; it is said it will not twist or go out of shape, and as there are no small journals or pins on the rollers, it makes an exceedingly strong bearing. The cone has an especially wide shoulder, against which the ends of the rollers have a bearing, practically to the center of the roll, the shoulder having the same degree of bevel as the ends of the rolls, the entire thrust being taken in this manner, giving great durability and strength to the bearing in this respect. This bearing is guaranteed by the company which says they are strongly made and of such material that they are claimed to be good for a heavy overload beyond the amount which they are specified to carry. The bearing is made interchangeable with any other form of conical or tapered roller bearing.

POPE NOTICE TO CREDITORS

The committee of reorganization of the Pope Mfg. Co. is sending the following notice to the first and second preferred stockholders: "The committee acting under the plan and agreement of reorganization dated July 15, 1908, gives notice that there has been deposited with the Central Trust Co. of New York, more than 60 per cent of first preferred and more than 35 per cent of second preferred stock. As the committee deems it advisable that there should be a speedy reorganization, it has fixed September 9, 1908, as the date or before which the first and second preferred stock must be deposited. Attention of the stockholders is called to the fact that the right given to acquire proposed notes of the new company, and in addition 50 per cent of the principal of the notes acquired in par of new stock at a cost of the par of said notes and accrued interest is conferred upon the depositors of stock, and that no such right is given to the holders of undeposited stock." Those whose stock is not deposited by September 8 will not be permitted to come in under the reorganization of the company.

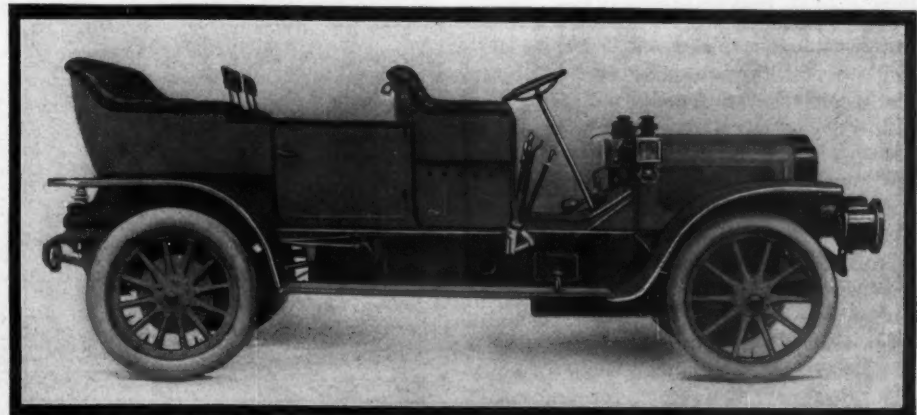


FIG. 7—MODEL M, 40-HORSEPOWER WHITE CAR

The Realm of the Commercial Car



WHITE STEAMER TAXICAB MAKES ITS DEBUT IN BOSTON

THE first steam taxicabs in America have been put in operation in Boston. They are built by the White company. The first one was delivered to its lessees in Boston last Thursday and another was given them Friday. They were immediately put in service downtown and ten more will be put in operation on September 10. The cabs are the regular chassis of the model O White steamer. They are rated as 20 horsepower, carry four people inside and one outside with the driver. Each cab is equipped with an American meter and the rates are standard, which comprise what is known as tariff 1 and tariff 2 in taxicab service. They are capable of the same speed as the White touring cars and they are easily controlled.

FRENCH FUEL TEST

The use of all kinds of fuel, economy in its use, and regularity of running, will form the basis of the taxicab and light industrial vehicle contest to be held in and around Paris from October 1 to 10. On the first day out all competitors must run on gasoline; on the second and third days 50 per cent carburated alcohol is obligatory; during the fourth and fifth days Lepretre's white spirit must be used, and on the last 3 days the choice of fuel is left to the competitors. Fuel consumption will be the base of the classification, the calculations being made on a price basis. Two main classes are provided for in the competition, each one of which is divided into three or four sub-classes. Thus, in the taxicab competition, the first class is for six-passenger hotel omnibuses with baggage capacity, the second for four-seated taxicabs and the third for the smallest two-passenger cabs carrying no baggage.

In the delivery vehicle class there are four divisions, for motor cycles with carrier attached; vans with a load capacity of 440 pounds; larger vehicles carrying up to 1,300 pounds; and finally for covered vehicles capable of taking a load between 1,300 and 2,640 pounds. During the 7 days' running, most of which will be around Paris, a schedule varying from 5 to 18 miles an hour must be adhered to with numerous controls, no speeding between controls to make up for lost time being allowed. Failure to make a control on time entails disqualification. There will be a hill-climbing competition during the test, and a speed test with standing start over a distance of 300 metres; these,

however, do not figure for the classification, which is made entirely on the following formula ———, in which T is the

T C

P x D

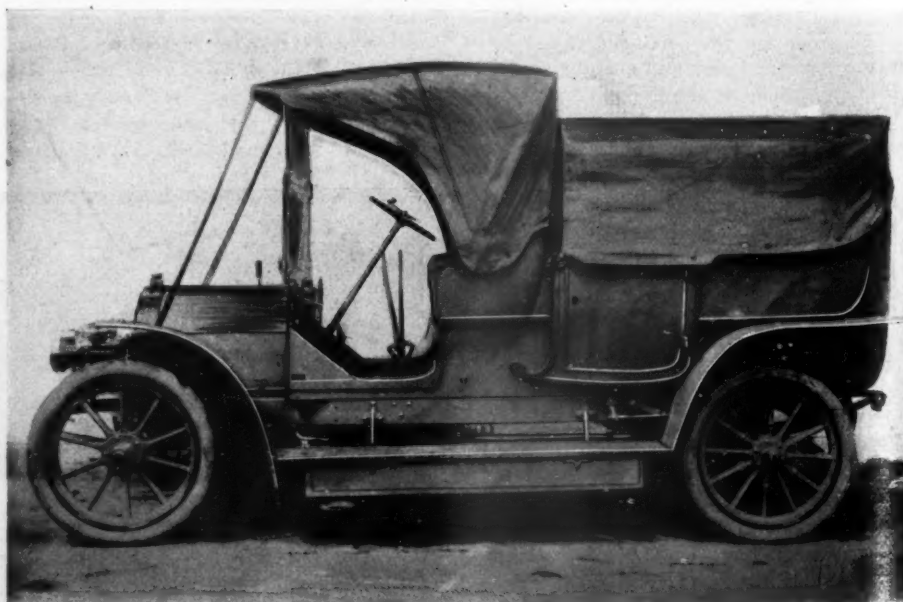
number of hours running; C the fuel consumption in francs; P the useful load in kilogrammes, and D the number of kilometers covered. All vehicles will be placed in a closed park at the end of each day's run, 1 hour being allowed for oiling, filling tanks and cleaning. No repairs or adjustments must be undertaken, officers being appointed to see that this rule is observed. Whatever repairs are necessary must be done by the team on the cars and by the tools and parts they carry with them, outside help of any nature whatever being rigorously refused.

HOLSMAN DELIVERY WAGON

A light delivery wagon is the most recent addition to the line of the Holzman Automobile Co., of Chicago. As indicated by its name, this newcomer is designed for business purposes. Except that the body is built longer and deeper in the rear, the construction of the rig is practically the same as model 11. Also it has a drop end-board and is capable of carrying 1,000 pounds of merchandise. The size of the body behind the seat is 31 by 42 inches.

CABBY MUST GO

It is confidently predicted in the city of Milwaukee by hotel managers that within 3 years the cabby will have disappeared from the streets of Milwaukee. Already the usual long line of hacks has thinned to almost nothing, and in their places are big motor cars. The livery business in Milwaukee has taken great steps in advance during the last sea-



MOTOR CAR UTILIZED TO CARRY DUPLICATING MACHINE

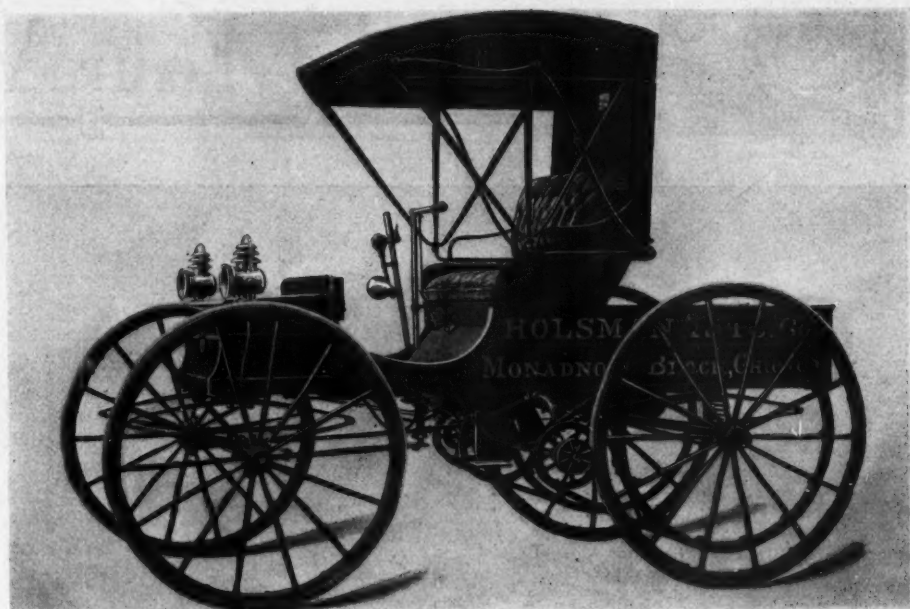
son, and "For Hire" cars are seen all along the curb on Grand avenue, the main thoroughfare in Milwaukee. The traveler generally chooses the motor in preference to the cab, for he gets a pleasant ride, quicker dispatch, and can see more customers or reduce his train-time limit with the car at only a slight advance in price of a cab. Taxicabs, however, have yet to appear in Milwaukee.

FAVOR MOTOR CARS

It is estimated that the city of Milwaukee will be well nigh horseless, as far as departmental service is concerned, within a few years. The latest applicant for a car is the city engineer and board of public works. Up to this time the board has been forced to rent machines to accomplish its work with dispatch and thoroughness. When Sherburn M. Becker was mayor, his private cars were often pressed into service. City Treasurer Schoenecker, former member of the board, is the hottest agitator of the plan. He said he was afraid to advocate the matter when he was a member lest it be construed as in his own personal interest. The police and fire chiefs, park superintendent, county sheriff, police patrol, and many other departments have been furnished with cars by the city.

AGAIN MAKES GOOD

The Philadelphia Inquirer, a daily paper, finding the Pennsylvania and Reading railroad's schedules unsuitable for an early delivery of its papers in south Jersey, last Sunday made a trial of a Mitchell truck loaded by the Penn Motor Car Co. Rain had fallen all day Saturday and the storm was still at its height when the Mitchell left the Quaker City with 2 tons of Sunday papers, about 1:30 a. m. At several places along the route the road was washed out; a weakened bridge necessitated a 5-mile detour; several fallen



NEW DELIVERY WAGON MANUFACTURED BY THE HOLSMAN COMPANY

trees lost the delivery crew many valuable minutes. But at every town the Mitchell enabled the subscribers to get their papers from 2 to 3 hours ahead of the usual time. Vineland, Millville and Bridgeton were all served in a veritable deluge and the truck was back in Philadelphia by 10 o'clock. So successful was the test that the Inquirer is seriously considering the advisability of organizing a motor delivery system for south Jersey.

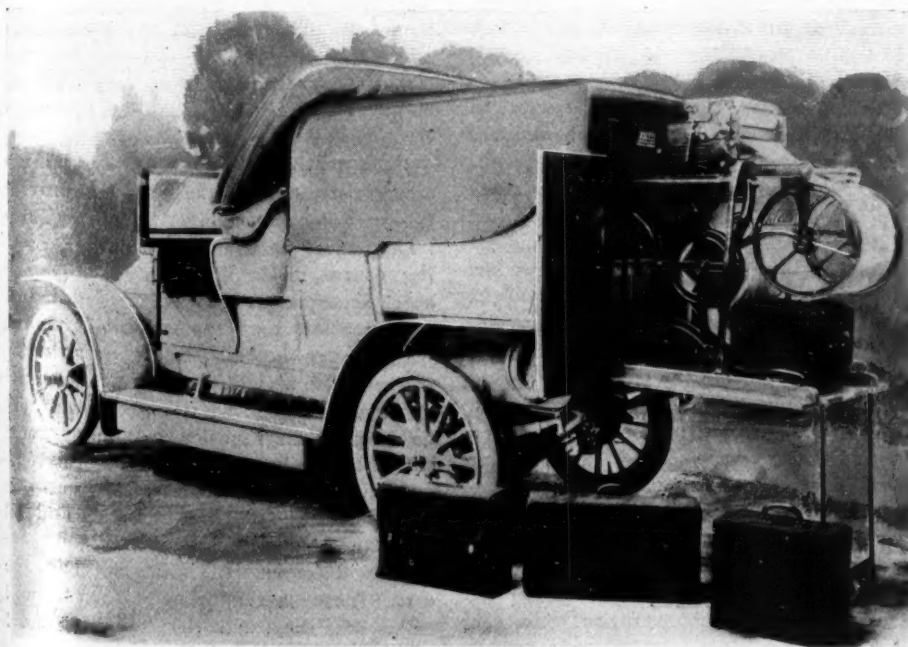
CARRIES DUPLICATING MACHINE

How much the motor car is being used for practically every purpose now-a-days is shown by the many special types that are built for certain lines of business and industry. In one particular case it concerns a duplicating machine such as is in use by any large firm. The car built for this special purpose entirely overcomes these troubles.

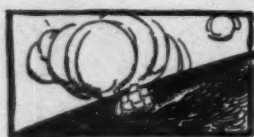
The agent has the machine and trunks loaded on his motor car and travels from one city, town or village to the other visiting the various shops without any outside help. After opening the double door in the rear a board is pulled out resting on one side on the chassis, on the other upon two struts; and the duplicating machine can be taken from the interior and at once be demonstrated to interested parties in very convenient manner. The rear portion of the car is used to take the load and in the front are two seats, demonstrating the sample takes place on the car itself and the latter is ready for continuing the trip within a few minutes. Thus much time is saved and the business man can visit quite a number of retail shops even in small towns which have no railway. Another advantage is that the car can be used as a four-seated touring machine by removing the canopy in the rear and the load. In this case the sailcloth which serves as canopy is unbuttoned, the door on the rear closed and the two seats put in the right place after the duplicating machine has been removed. It has now the form of a double phaeton. The motor develops from 8- to 14-horsepower and has a motor of two cylinders.

WILL SELL HIS HORSES

From the prominent town of Suffield, Conn., in the tobacco belt, comes the news of a wide awake rural mail carrier who has given up horses for the more speedy motor car. The man in the government service is himself a tobacco cultivator and he claims that in the time saved, about 3 hours, by means of the motor car, he is enabled to devote as much more time to the cultivation of the weed. He claims that it costs him just 18 cents per day to operate his car, while his horses cost him at least \$1. He intends to dispose of his horses. His example is one worthy of emulation by his colleagues in the rural free delivery service in that section.



SHOWING ACCESSIBILITY OF SAMPLE MACHINE



From the Four Winds

N S E W



CHALMERS-DETROIT CAR THAT IS MAKING A DOUBLE CENTURY A DAY

Popular With Politicians—It is estimated that no fewer than fifteen big cars are in use in all parts of Wisconsin in the campaign for United States senator. Every candidate has a number of cars out distributing literature and getting close to the farmer vote. The motor car no longer is a bugaboo, and no candidate fears to approach the farmer in the motor car. Indeed, it is said that the tillers of the soil welcome it, especially when candidates offer them little side-tours.

New Stunt in Wisconsin—Fishing from motor cars is coming to be quite the thing in Wisconsin. A number of "stag" parties of tourists have returned to Milwaukee with big catches and they claim that the fish were captured without getting out of the car. Henry Weber and George J. Lonstorf recently headed two big parties of tourists who brought back such reports. It was easy, they said, to run up to the shore of the thousands of little lakes that dot the map of Wisconsin, throw out the line and pull in the whoppers. They are trustworthy men and to be believed.

Double Century Progress—The Chalmers-Detroit Thirty, which is making a run of 200 miles a day for 100 days, has completed the first 2 weeks of its strenuous test. Four trips a day is the regular program for the Pontiac car, as it is called by the people of Detroit. The car starts each morning at 5 o'clock from the Pontchar-train hotel, running out to Pontiac, 26 miles, and returning in time for breakfast. Even for this early trip there are generally three or four passengers. The second trip is made at 8:30 o'clock. Two afternoon trips are made, the first at 12:30 o'clock and the last trip at 4 o'clock p. m. Securing places in the car for one of the trips is like making a reservation for a Pullman

sleeper. A schedule card is kept at the garage of Grant Brothers, Detroit agents for the Chalmers-Detroit Motor Co. Appointments are made for local customers and visiting dealers from one trip in advance to 2 days in advance.

Good Roads the Topic—The good roads question will receive a most thorough dissection during the annual meeting of the Wisconsin League of Municipalities at Oconomowoc, Wis., September 2, 3 and 4. Mayors and city engineers of all the larger cities are scheduled for addresses on this topic. It is a fact that during the last year the good roads problem has become one of the foremost for cities in this state and the growing use of the motor car is considered responsible for the awakening.

Electric On Long Trip—A. H. Ackerman in a Studebaker high-speed electric stanhope, recently drove from Albany to Utica, a distance of approximately 98 miles. The roads are so rough and the grades so heavy that Mr. Ackerman was told that it would be impossible to make the trip in an electric car. "I think had I realized the conditions of the roads, I should not have undertaken it," says Mr. Ackerman. "Even the short run of 22 miles from Albany to Schenectady is avoided by electric owners because of the hills and grades. During the entire run we did not experience trouble of any kind, even being immune from tire troubles. In many of the smaller towns ours was the first electric and created a good deal of comment. One rather amusing incident happened about 50 miles from Albany. We drew up to a garage, and I inquired, 'Can we get any juice?' meaning, of course, current. Imagine my surprise when the man appeared a moment later carrying a 5-gallon can of gasoline. It was only after

much explanation that I convinced him that was not what I wanted, and he directed me to an electric lighting plant some 2 or 3 miles away."

Rules on Licenses—A question of more than ordinary interest to owners was recently submitted to the attorney general's office at Columbus, O. Under the new Ward law, the owner of a machine and members of his family are permitted to operate it without taking out a chauffeur's license. Under the ruling of the attorney general no officer or member of a corporation will be permitted to operate a machine belonging to the corporation without the license. As hundreds of corporations in this state own trucks and other similar motor vehicles the opinion is important because it means that each employe who operates it must have a separate chauffeur's license or subject himself to the penalty prescribed by the law.

Mischievous Boy a Pest—Wisconsin owners are not bothered much by that personage now so widely known as "the borrowing chauffeur," but there is a pest just as inimical to their interests—the boy who loves to scratch his initials in the back of the tonneau while the driver is absent. J. E. Glover, a New Richmond, Wis., owner, has had the expense of entirely refinishing his big car because some boys at Eau Claire, Wis., where he stopped on a recent tour, scratched all sorts of hieroglyphics and cuneiform inscriptions on the back, sides and radiator, which were covered with dust, with nails. The marks went to the wood.

Clifton's Glidden Suggestion—Talk of the 1909 Glidden tour is already rife. Some would have it that Chicago to Denver and return is impossible for the reason that accommodations are lacking. "We believe," said Charles Clifton, of the George N. Pierce Co., "that accommodations will be possible when they can run a special train along the route and provide every accommodation for all. Three trains, three servants on each car, serving course meals three times daily and hotel accommodations ready at command, will cost less than the regular hotel and will be far better. These accommodations moved at will cost less than \$5 per day per man. In these special cars will be found a large parlor and dining room and a large observation room. The tourists will have more comfortable quarters and be better fed than at hotels and all baggage trouble will be saved and baggage will be carried in special baggage cars. Three servants on each car will make life easy and the traveling hotel will meet the tourists each night as willed, adding to the tour comforts."



News from the Motor Clubs



Gymkhana in Rochester—The Rochester Automobile Club, of Rochester, N. Y., recently held a successful gymkhana and many interested spectators were in attendance. Only owners were allowed to handle their cars in the contests. Large and small machines took part in the various races. The feats included riding for rings, javelin throwing, an overall contest and other feats.

Tour to Land Opening—W. G. Raish and family of Clarks, Neb., have finished a 2,000-mile trip to the San Luis valley land opening which took place August 12. They traveled overland in a big Rambler touring car, camping out every night. Their camping equipment, which included tents, cooking utensils and gas range, was attached to the car. The weight of the party was 740 pounds and that of the camping outfit 1,400 pounds, making a total weight of 2,140 pounds, besides the weight of the Rambler car itself.

Bay Staters to Move—The Bay State A. A. in Boston is getting ready to move from its present quarters to the Hotel Carleton in the Back Bay. There has been a lack of interest in the club on the part of members of late and day after day the old guard, comprising about a dozen, has had the big place to themselves. When the club is moved to the Carleton there will be a general hustle made to interest the members and try to galvanize the club into new life. There is said to be need of a good live club in Boston and the Bay State can fill the place better in its new quarters without doubt.

Stopping Scorchers—The Automobile Club of Bridgeport, of Bridgeport, Conn., has been doing good work lately in endeavoring to have motor cars observe a reasonable rate of speed. Circular letters have been sent to the members by the public safety committee, giving the sections of the law most often violated and asking members to join in supporting the law, for which the club was partly responsible in having passed, and which is one of the most liberal and admirable in the country. The public safety committee has been following this up with personal letters to owners of cars where flagrant violations of the law have come to its notice. Last Sunday the committee placed flagmen on Connecticut avenue, a wide and much traveled thoroughfare, forming the eastern approach to the city. Motorists were halted and handed a card which asked that a reasonable speed be preserved on this street and through the city. Recently a car containing several prominent physicians collided at night with a man driving a horse on this avenue, and all were more or less injured. The man on the wagon



W. G. RAISH USES RAMBLER TO TRAVEL TO LAND OPENING IN SAN LUIS VALLEY

was taken to a hospital. The people in the vicinity are somewhat wrought up, claiming that excessive speed is maintained by many motorists, and the automobile club is endeavoring to adjust the matter for the public's comfort.

Enlarges Meet Plans—The Milwaukee Automobile Club's committee in charge of the race meet on September 19 at state fair park has changed its plans, and the meet will be much larger in scope than at first intended. The original plan was simply to carry the match race between the Locomobile and the Pope-Toledo for a purse of \$1,000 for a 50-mile run. Now it is proposed to secure entries for a number of contests.

Sawyer Made Secretary—Herbert M. Sawyer, the recently resigned secretary of the board of trade of Worcester, Mass., has been notified of his election to the office of secretary of the Worcester Automobile Club by its board of directors. He will enter upon the work at once and already has been made a director that he may attend state club meetings and represent the Worcester club, the brunt of this work formerly devolving upon the president, John P. Coughlin.

Badger Ticket Made Up—The annual meeting of the Wisconsin State A. A. will be held at the Plankinton house club room in Milwaukee on Wednesday, September 9, at 8:15 p. m. The following nominations for director have been mailed to members by Secretary James T. Drought: Neal Brown, Wausau, president; C. O. Josslyn, Oshkosh; M. C. Moore, George A. West and James T. Drought, secretary, Milwaukee; Frank P. Hixon, LaCrosse; A. R. Barker, Portage; F. H. Blodgett, Janesville; C. Roy McCanna, Burlington;

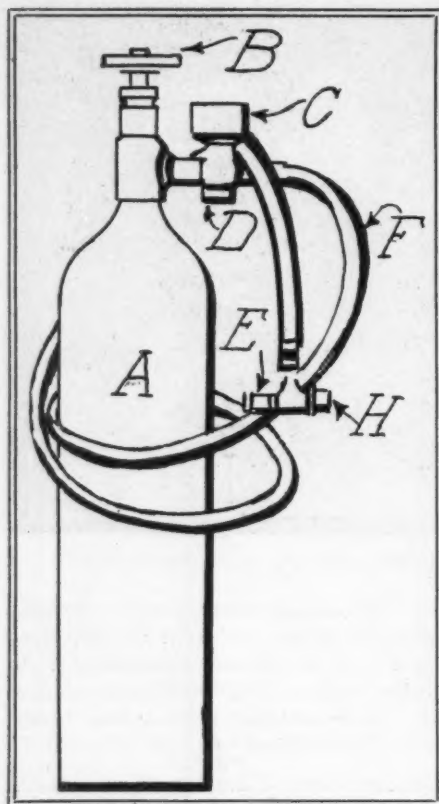
H. L. Halvorsen, Whitewater; B. F. McMillan, McMillan; James A. Wright, Merrill; Henry N. Boehm, LaCrosse; A. J. Horlick, Racine; F. A. Chadbourne, Columbus. There will be a "love feast" following the meeting.

Member Gives a Club House—Lewis E. Taubel, a prominent member of the Norristown Automobile Club, has offered the club the use of a handsome modern dwelling, on the Ridge pike, above Jeffersonville, Pa., as a clubhouse. The property is admirably suited to the purpose, and at a trifling expense can be converted into an up-to-date club house. The spacious grounds surrounding the mansion are ideally located for golf links and other outdoor sports, and the present feeling in the club is that the generous offer of Mr. Taubel will be accepted when the matter comes up for consideration at the next meeting of the Norristown club.

Mapping Out a Route—The touring committee of the Bay State A. A., together with some of the Boston newspaper men, started Monday week from Boston to map out the route of the endurance run of the club which takes place next month. They rode leisurely to Bretton Woods, taking pictures along the route and returned Wednesday after a pleasant trip. The committee in charge of the test has not yet begun an active campaign for entries. The proposed run will make a number of the Boston men handling big cars who have not entered other such events either take part or keep quiet. Some of them have kept out on the plea that the tests were too easy. The rules for this run will make the cars go some and also the drivers to get a perfect score, it is figured by the Bay Staters.



Development Briefs



THE GOODYEAR AIR BOTTLE

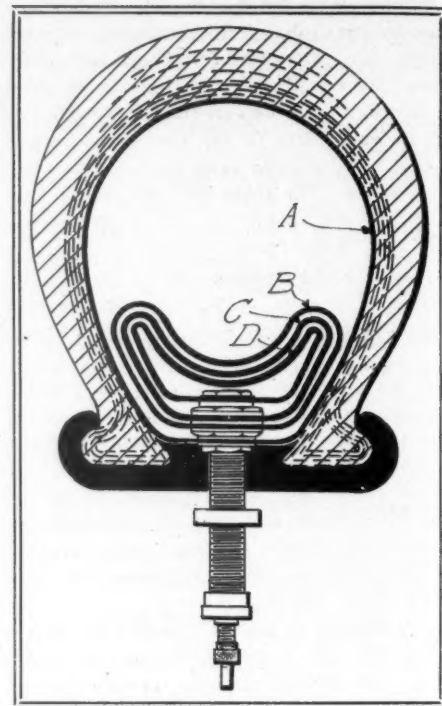
GOODYEAR AIR BOTTLE

Another addition to the automatic tire inflating devices, and one which has quickly introduced itself to the motoring public, is the Goodyear air bottle brought out by the Goodyear Tire and Rubber Co. and made in two sizes. This air bottle—as its name suggests—is filled with compressed air and not gas. It consists of steel bottle A, fitted with the usual valve and controlling mechanisms on top, the more important of these being the valve B, the pressure gauge C, a safety blow-off D, and the valve lifter E. In inflating a tire, it is but necessary to connect the tubing F with the tire valve and open the valve B, permitting the tire to fill to the desired pressure as shown by the gauge C. In filling, it is necessary to attach the nipple H securely to the tire valve and screw down the valve lifter E; this done, the valve B is gradually opened, until the gauge C shows the pressure desired. The Goodyear people recommend that the gauge needle should not be permitted to record more than 20 pounds in excess of the pressure desired at any time. As the needle shows the pressure dropping, slowly open the valve until it becomes stationary at the desired pressure. This done, close the air bottle valve B securely. Should the gauge show the tire pressure to drop, slowly reopen the valve until the gauge pointer

indicates the proper pressure. This done, it is only necessary to close the valve again, unscrew the valve lifter E and detach the nipple. The little bottle holds sufficient air to inflate twelve 3-inch tires and the large bottle to inflate twenty tires of this size. The smaller size is intended to be carried under the seat, the larger size in a special box on the running board. The company in selling these air bottles agrees to keep them charged free for 2 years.

FIFIELD DEED DRILL

A useful tool introduced among the many garages and repair shops during the past few months is the Fifield automatic feed hand drill, which, as shown in one of the two illustrations, is of the chain type. The feature of the drill is its automatic feed—the harder the metal being drilled, the slower should be the feed; also, the larger the diameter of the drill, the slower the feed. Bennett & Bennett, Chicago, sales agents of the device, claim to accomplish a feed of this nature by a simple friction device, which is illustrated in the sectional illustration of the drill. In this illustration, M is the yoke or shank to which the attaching chain anchors. Within this is a hardened bushing H with a flange at the lower end bearing upon the race of ball bearings, and the upper end threaded into a ring A. The interior of the bushing H is threaded to take the stem K of the drill. The feed adjustment is by a set screw B, which threads into the shank M, bearing upon a spiral spring which forces a small brass plug against the bushing H. The operation of the feed is as follows: With the set screw B unscrewed so the plug does not bear against the bushing H when the stem K is rotated, it carries with it the bushing H; this revolving in the shank M, and consequently there is no feed to the drill. If the screw B is tightened, the friction generated between the plug and the bushing H is sufficient to retard slightly the bushing, so that it rotates slower than the stem K,

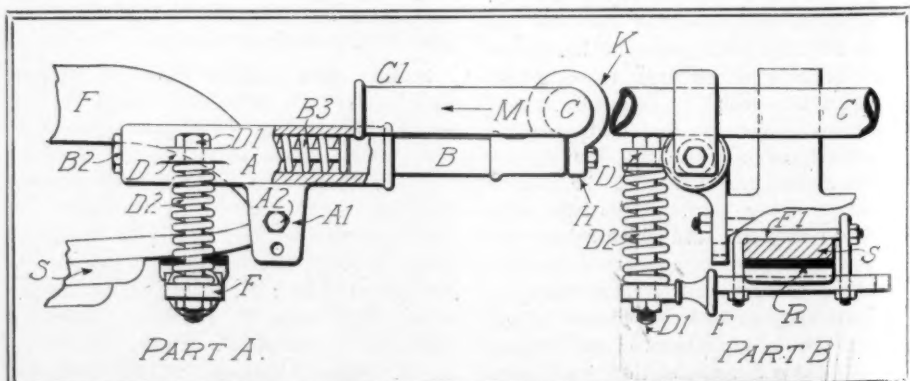


THE FAULTLESS INNER TUBE

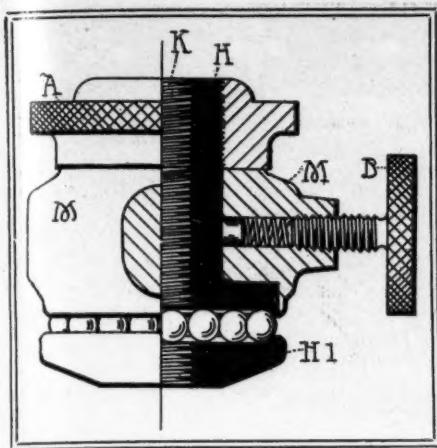
which difference in rotation causes the stem K to lower, giving the desired feed. The faster the feed, the more must the screw B be tightened. With this screw sufficiently tight, the bushing H could be positively locked with the shank M, at which time the feed of the stem K would be equal to the thread between the stem K and the bushing H.

LIFE TIRE-FILLING SYSTEM

Somewhat new in the tire-filling art is the system brought out by the Tire Life Co., New York city, which is briefly as follows: A standard clincher outer casing A is mounted in the usual manner on a clincher rim B. Within this is an inner tube C, within which are four elements: a small-diameter air tube D, a triangular filling E enclosing it, a triangular wrapping of fabric F and, finally, a filling G



SIDE AND END SECTION OF MCGREGOR BUMPER

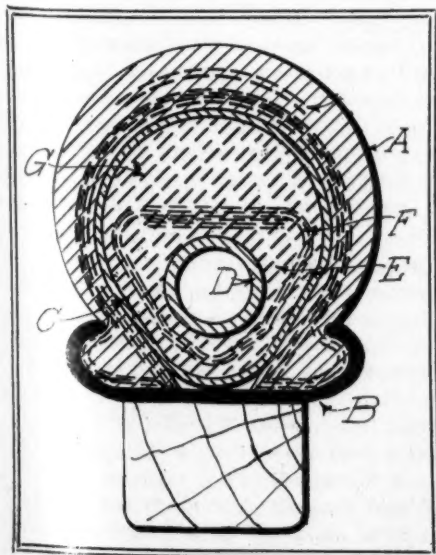


SECTION OF FIFIELD AUTOMATIC DRILL

occupying the remainder of the inner tube C. In a tire of this nature, puncturing is practically impossible because of the small diameter of the air tube D and further because of the extra protection of it offered by the fillings E and G and the triangular fabric F in addition to the regular inner tube C and the tire casing A. Should puncturing occur, the maker claims, the resiliency of the fillings E and G is such as to give a serviceable tire. The claim is made that the filling compound will not liquefy or disintegrate, and should a cut occur in the outer casing A it will not leak through. Filling a tire with this preparation adds from 10 to 25 pounds to its weight.

FAULTLESS PNEUMATIC TIRE

In the Faultless pneumatic tire, manufactured by the Guarantee Faultless Auto Tube Co., New York, an effort is made to avoid puncture by means of four inner tubes, designated respectively A, B, C and D. Each receives its air supply through a valve E, so constructed that it is possible to let the air into each of the four inner tubes separately. The illustration shows the outer tube A inflated. Should it suffer a puncture, the tube B is inflated, and, being concentric with the tube A, expands within it, giving in reality two inner



LIEP TIRE—FILLING SYSTEM

tubes, one only containing the air. In like manner, should the inner tube B become punctured, C is inflated and finally D.

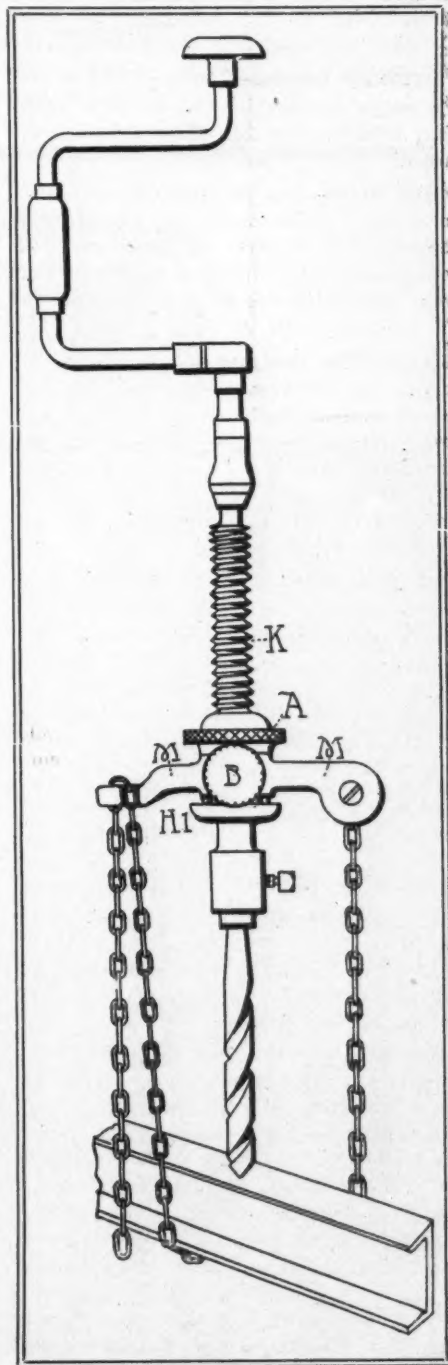
THE MCGREGOR BUMPER

The McGregor bumper, marketed exclusively by the Van Sicklen Sales Co., 1200 Michigan avenue, Chicago, is, as its name suggests, for the protection of headlights on motor cars, and has two claims advanced for it: One, that it can be attached with facility to full elliptic springs as well as to semi-elliptics; and, second, that it is attachable to any car without drilling the frame, this latter being a consideration which makes it possible for any maker to attach the bumper without visiting a repair shop or garage. In the two illustrations, part A shows the bumper as seen from the side of the car, and part B as seen directly from in front of either of the front springs. Analyzing the part A illustration, A is the horizontal socket into which fits the carrier member B, which carries the bumper rod C, C-1 being the curved end of the bumper rod. On the underside of the socket A is the lug A1, which, by means of the bolt A2, the bumper is attached through the bolt eye of the frame F, the regular spring bolt being replaced by the bolt A2. This is but one attachment; the other is through the lug D on the side of the socket A, which connects through the bolt D1 and the spring D2 with an adjustable clip F which spans the leaves of the spring S. This clamp is adjustable laterally and has a rubber bumper R between it and the leaves of the spring. The spring D2 affords resiliency in case the impact blow is down as indicated by arrow K or up as indicated by arrow H, the spring extending and compressing, respectively, and the bolt A2 acting as pivot. When the impact is horizontal as represented by the arrow M the jar is absorbed by the spring B3, which is interposed between the inner end of the carrier B and the end of the socket A. In order that the carrier B may not be pulled out through the forward end of the socket A, a bolt B2 is brought into use, which passes through the center of the spring B3 and threads into the inner end of the carrier B.

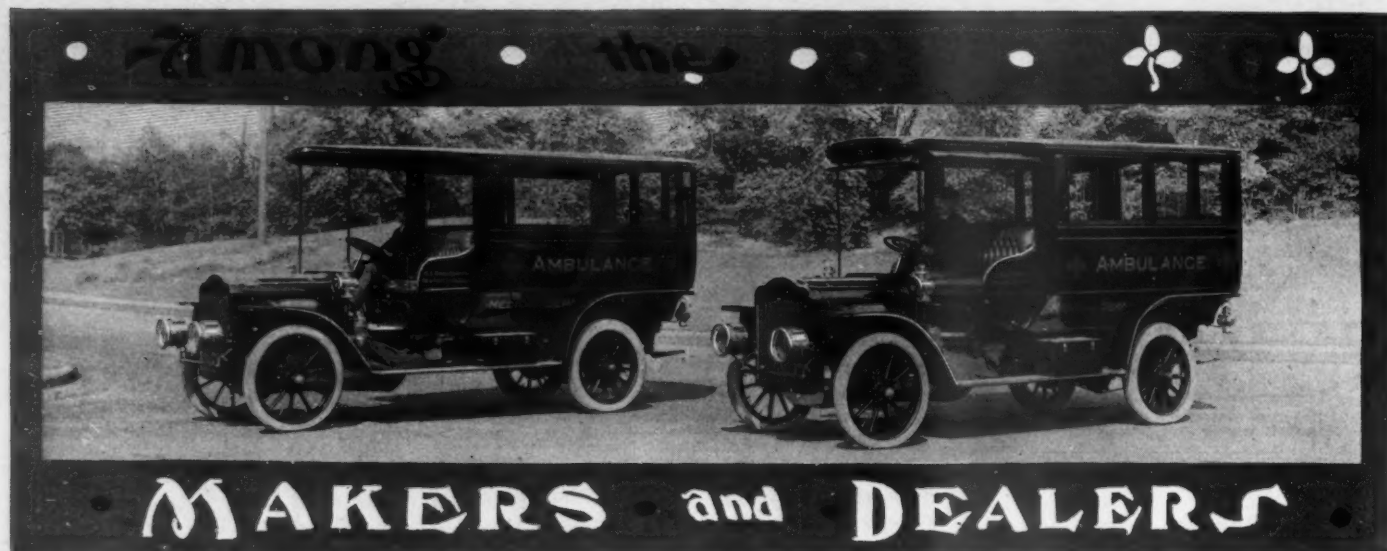
FRENCH TIRE PUMPS

Tire inflators operated by the motor have been put on the French market of late in such quantities that the makers have begun to look for them as a weekly addition to the stock in trade of motor-dom. One of the latest to be introduced is the Bauche system, which makes use of the ordinary hand tire pump with the addition of five extra parts. A metal bearing is fitted under the running board of the car, about a foot from the rear end, and is disposed to receive a steel spindle secured by a cotter pin, a couple of inches only projecting. To the base of the pump is attached a special socket which fits on the projecting pin, a cotter pin again securing it. Instead of the ordinary pump handle there is a tube screwing into a

bracket permanently attached to two of the spokes of the rear wheel. The result is an ordinary pump attached to the running board, but free to turn in its bearings, and the piston secured to an arm projecting from one of the spokes of the rear wheel. On one side of the car being jacked up, the engine started and the low gear put in, the pump goes into operation. Naturally only three tires can be inflated with the apparatus in position. To inflate the fourth one it is necessary to transfer the pump to the opposite side, a simple matter, however, seeing that the bearings are carried under each running board and the apparatus is reversible. The only permanent visible attachments are the brackets on the rear wheel. The inflator is sure of ready acceptance at the hands of the motorist.



FIFIELD AUTOMATIC DRILL



WHITE STEAMER AMBULANCES ORDERED BY GOVERNMENT FOR NAVAL HOSPITAL SERVICE

Gyroscope Locates—The new home of the Gyroscope Automobile Co., in New York city, is located at 231 West Fifty-fourth street.

Hub Move—The Whitten-Gilmore company, agent in Boston for the Thomas and Chalmers-Detroit cars, has secured a fine new place at the corner of Falmouth and West Newton streets for a garage and repair shop for cars.

Starts Fiat Company—The Fiat Automobile Co., of New York, has opened a branch house in Philadelphia at 514 North Broad street under the management of Cornelius Barrows. Barrows formerly acted as agent for the Fiat in the Quaker City, but the car has not been represented there for the past year.

Olmstead Changes—E. B. Olmstead, who for the past 5 years has been secretary and general sales manager for the Auto Car Equipment Co., of Buffalo, N. Y., manufacturer of commercial trucks, has resigned to accept the position of vice-president and general manager of the American Motor Truck Co., of Lockport, N. Y.

Suit for Receiver—Suit for a receiver for the Albany Automobile Co., of Albany, Ind., has been brought by some of the stockholders, who hold that the concern is insolvent. The company has been operating for about 2 years and has manufactured a motor buggy. It is stated that the company's liabilities are about twice the amount of the assets.

Winton Additions—The Winton Motor Carriage Co. has engaged George H. Smith and Charles S. Calvert to cover eastern and western territory respectively. Smith was formerly Philadelphia branch manager for the White, and, prior to that, represented the Packard in New York. Calvert has for several years sold Wintons in Newark, N. J., as a member of the firm of Calvert & Zusi. He has now disposed of his interest in the business. Sales Manager Churchill has appointed George Arbuckle chief of Winton supervisors.

Arbuckle has been on the Winton staff since 1902 and is well known to the trade from coast to coast.

Makes Ready for 1909—The Pennsylvania Auto Motor Co. is finishing up its '08 business and getting ready to start the '09 product. It announces there will be absolutely no change in its new car except in a very few details.

Navy Buys Ambulances—The navy department has just received two White steamer ambulances, one of which will be used by the naval hospital at New Fort Lyon, Colo., and the other at the naval hospital at Philadelphia.

Buick to Invade New York—W. J. Mead, assistant manager of the Buick company, who has been in Boston some weeks putting the Hub branch on a permanent basis and enlarging the store, is authority for the statement that the company now contemplates establishing its own branch in New York also. At present the cars are sold there through an agency, but the company is gradually adopting the plan of having its own branch houses.

More Columbia Claims—Some of the creditors of the Electric Vehicle Co. failed to present their claims within the time stipulated and for their benefit the receivers had the time limit extended. As a result of this time extension claims to the amount of \$21,632.52 have been presented in addition to those already approved and filed in court some time ago. Of these claims, however, the receivers' books show but \$18,031.83 as being due.

Kissel Increases Stock—At the annual meeting of the Kissel Motor Car Co., of Hartford, Wis., maker of the Kisselkar, it was voted to increase the capital stock from \$100,000 to \$200,000, to give more working capital to its extensive plans of expansion. The output for 1909 was placed at 1,200. Two large buildings will be erected at once; a new shop, 50 by 130, four stories, and a moulding shop, 20 by 100. The old implement shop of the L. Kissel

& Sons Co. will be converted into a specialty plant, and the Kissels will make their own tops, fenders and hoods.

Cramped for Room—The Taxicab Motor Co., of Boston, has moved into larger and better quarters in the Motor Mart. The company has been doing well and it found itself cramped for room. The large quarters formerly occupied by the Corbin company have been taken.

New Diamond Man—E. P. Webber goes to Boston from Philadelphia as manager of the Diamond Tire Co.'s branch to succeed W. P. Cronin, who has had charge of the office for some years. Mr. Cronin goes to the factory, where he will take charge of the bicycle tire department.

Stidham In New Role—F. D. Stidham, chief observer of the 1908 Glidden tour, has become identified with Stanley & Patterson, 23 Murray street, New York. He will devote his entire time to the sale of the Patterson wireless dry battery holder for motor car and motor boat work.

To Be Three Overlands—Three models are to be manufactured by the Overland Automobile Co. of Indianapolis, next season. The company was reorganized a few months ago and this season has devoted its attention largely to a four-cylinder roadster. In 1909, however, four-cylinder touring cars and roadsters and a six-cylinder touring car will be placed on the market. Contracts have been closed for parts for a minimum of 1,500 cars in 1909.

Others Included—Treasury department regulations of November 27, 1907, establishing a rate for the allowance of drawback on motor cars manufactured by Brewster & Co., of New York, with the use of imported materials, have been extended to cover the exportation of motor cars manufactured by the Sultan Motor Co., of Springfield, Mass., with the use of imported steel side and cross frames, rear and front axles and hubs with ball bearings, springs, steering gears, operating

levers and transmissions, steel forgings and other parts, in accordance with the sworn statement filed with the surveyor of customs at Springfield.

Bahaman Duties—Under the new tariff act of the Bahama Islands, motor cars, which were formerly admitted free of duty, must now pay 10 per cent ad valorem.

Auto Era's Birthday—The Auto Era, the monthly house organ of the Winton company, enters into its eighth year in September, being the oldest motor publication of its class in the world, it is claimed.

Represents the Stearns—The Wisconsin Automobile Exchange, recently incorporated under the laws of Wisconsin, has secured the state agency for the Stearns car, which has hitherto been unrepresented in Wisconsin excepting through the Chicago agents.

Kansas City Changes—A second story has been added to the garage of the Fletcher Cowherd, Jr., Automobile Co., at 3206-8-10 Troost avenue, Kansas City. The Frank Woodward Automobile Co., agent for the Knox, is moving into its new quarters at 1908 Grand avenue.

Will Reopen Autocar Branch—On September 1 the Autocar Co., of Ardmore, Pa., will re-establish a branch house in Philadelphia, and the General Motor Car Co., which has represented that car in the Quaker City for the past year or more, will move a few doors below, to 227-229, where it will continue business with the Lozier as its star card.

Rally of G & J Men—The annual "homecoming" of representatives of the G & J Tire Co. is being held at the factory in Indianapolis this week. Representatives from eighteen branches and distributing houses are present and the company has arranged an attractive program for their entertainment and instruction. Developments of the tire industry are being discussed and trade conditions in various parts of the country were taken up. The factory has been working 24 hours a day for some months.

More Pope Orders—Vice Chancellor Howell, of Newark, N. J., has issued an order on the application of the counsel of the receivers of the Pope Mfg. Co. directing that parties interested show cause September 8 why the receivers should not be allowed to accept an offer of \$190,000 for the stock of the Pope Motor Car Co., owned by the Pope Mfg. Co. The plant of the Toledo concern is not mortgaged. The proposed sale is said to be another step towards effecting a third 25 per cent dividend to the creditors of the Pope Mfg. Co. A second order signed by the vice chancellor directs parties in interest to show cause, on the same return day, why the receivers should not be authorized to pay a 2½ per cent commission to Thomas Taylor & Co., of Chicago, who negotiated the recent sale by the receivers of the capital stock of the Columbia Steel Co. of

the par value of \$300,000 for \$190,000 cash. This stock was owned by the Pope Mfg. Co. and it will be remembered that it formed a part of the second 25 per cent dividend paid to the creditors.

Warner Convalescing—Arthur Warner, of the Warner Instrument Co., of Beloit, Wis., is convalescing from an attack of typhoid fever, which took him down while he was in the east recently on a business trip in Atlantic City, N. J.

Big Carbureter Order—F. H. Wheeler, as a result of a visit to the Buick factory at Flint, Mich., announces he contracted with the Buick Motor Co. for 21,000 Schebler carbureters for the concern's 1909 output.

Will Make Speedometers—The Peerless Specialty Co., of New York, has just been incorporated, and among the articles it will manufacture and push is the Peerless speedometer, which is equipped with a mileage and maximum hand and season and trip recorder of mileage. The com-

pany will maintain a repair department in New York. The officers of the company are W. K. Thomas, president; E. C. Angell, vice president, and J. S. Ridley, secretary and treasurer.

One More Convert—The Indiana Carriage Co., Indianapolis, has taken the Indiana agency for the Regal, making the third carriage concern in Indianapolis to handle motor cars. There are now only two carriage repositories in the city that do not carry either motor cars or sundries in their stores.

Call for Locomobile Men—There will be a general meeting of the branch managers, factory men and principal agents of the Locomobile company at Bridgeport in a few days, when the 1909 season will be discussed. There is some talk that the company will make some important changes in its smaller type of car. Some news regarding the entering of a car in the Vanderbilt race may be expected about that time, also.



NEW YORK HOME OF THE GYROSCOPE AUTOMOBILE CO. AT 231 WEST FIFTY-FOURTH STREET



Legal Lights and Side Lights



AFTER RECKLESS DRIVERS

The Massachusetts highway commission has gone on record that the reckless operation of motor cars is really going to be stopped, judging by two statements that were given out by the commission last week and one given out the preceding week. The commission has heretofore contented itself with going about its work and not saying much, but the three statements show that the commission wants the motorists to know, that the mere fact that one sits at the wheel of a car does not give the right of way on the highways. In fact, the burden of proof is now up to the driver of a car to clear himself in case of accident. The first statement was to the effect that any chauffeurs found to have taken out the cars of their employers without permission would lose their licenses. Last week the commission had a case of a driver who though not driving fast, yet tried to edge in and as a result his car bumped into a conductor on the running board of a street car. After reprimanding the chauffeur, the commission, having in mind the reckless way that chauffeurs dodge about in the streets of Boston, which are very narrow, decided that a bit of warning would be a good thing to others. So this statement was issued:

"At the date of this accident, the law requiring all vehicles to keep upon the right side of the middle of the traveled part of the road when the view is intercepted by traffic or otherwise had not taken effect. The board wishes at this time, however, to state that, unless under very peculiar and exceptional circumstances, it will feel obliged to suspend or revoke the licenses of operators of motor vehicles if such vehicles are operated through narrow places or through crowded streets, or in and out of traffic in such a way as to endanger or injure any person who is using the highway lawfully and in the exercise of due care. Operators of motor vehicles must, at their peril, practically insure that there is sufficient room to pass safely when they attempt to run through narrow places, thereby injuring other people."

Later in the week there were several other cases brought before the commission involving different degrees of negligence, and to make it more prominent that carelessness would not be tolerated this statement was added to the report telling of the revocation of several licenses:

"The operator of a motor car, or the person who is responsible for its operation, will be held responsible for the safety of the other users of the highway, even when he is guilty of no gross carelessness or recklessness, but an accident happens

through his inadvertence, or his failure to recognize the conditions of the road, or to operate properly in an emergency, the penalty, of course, being different according to the character of the accident and the reasons therefor."

No owner or driver can now plead ignorance of the law or of the warning given by the Bay state commission. The commission has had too many accidents brought to its attention by the Safe Roads Association and also by its own investigators, so it is determined to stamp them out. Any driver now who shoots through narrow lanes of traffic taking a chance stands in jeopardy of losing his license. When a number of other drivers have lost their licenses there will be a change for the better, as the commission holding the license power has the upper hand, and when a few examples are made of reckless operators and owners a better era will result. The commission recognizes that the drivers are not always to blame and where one is operating under orders it will be the owner that must take the consequences. Judge Cutler, of Chelsea, by the way, has taken a step in that direction, too, for last week when a driver was arrested for speeding on the beach parkway the judge asked the driver if he was acting under orders and if the owner were in the car. The driver said he was, and the judge told the officers plainly that he was tired of having the men at the wheel arrested and the owners, when in the car, not molested and that the officers were negligent in their duties. He placed the case on file and intimated to the officers that they should get onto their jobs.

WIPES OUT ALL DEBTS

Judge Thomas A. Whallon, of the Indianapolis police court, has won the gratitude and good will of about 200 motor car owners by recalling all warrants outstanding for the arrest of owners who failed to pay the city license in 1907. There were 234 of the warrants originally but a number of arrests had been made and the victims fined. However, it was found that the majority of those arrested had paid the 1907 fee before the warrants could be served and Judge Whallon said the cases took up too much of the court's time. The city will insist upon the 1908 license being paid but will make no further attempt to collect the 1907 fee from the motorists of Indianapolis.



CHICAGO SITUATION SERIOUS

City officials have started the active work of collecting the Chicago wheel tax, which was due last May, but which has not been paid because of various actions in courts. In consequence of this the motorists of Chicago as well as those in the towns throughout the state of Illinois have become aroused and preparations are being made to fight the measure which is regarded as a serious menace to motoring. The Chicago Motor Club and the Chicago Automobile Trade Association, working together, have employed legal talent and through William H. Arthur, ex-assistant corporation counsel, will go the limit as far as the courts are concerned. Both organizations have advised their members not to pay the tax and Attorney Arthur stands ready to defend any of them who are arrested for not doing so. The bill Arthur is working on makes two claims; one is that of unjust discrimination in that the law does not provide for a tax on motor cycles or delivery carts and neither does it impose a tax on a motor car which has seating capacity for but one person. Thus, for instance, a tester's seat on a chassis would exempt that car from taxation, he claims. His other point is that the state motor law, which has been in force for a year, takes away from the city the right to collect this tax. It is along these lines that the fight will be made and Arthur is sanguine of success. The fear aroused by the bill is that if Chicago is successful in collecting the tax every little town and village throughout the state will follow the city's example. It may result in bringing the question of interstate commerce into the fight, if the towns attempt to collect a wheel tax from tourists passing through the various municipalities. At the present time it is thought no effort will be made to collect from tourists, but it is said a resident of a suburb, coming into the city each day, may be forced to pay a wheel tax in each of the small towns through which he passes. This will be particularly hard on residents of the north shore who drive in each day. Evanston, along this route, already has a wheel tax and others may follow this example. The wheel tax also will hit the dealers in that it will be necessary for them to take out a wheel tax for each of their cars before they can be run on the streets. Other points against the new law are that there is a discrimination between the rates charged motor cars and those for horse-drawn vehicles, a two-passenger motor car being taxed \$12 and a single-horse rig only \$5. Then again the money is to be spent for the maintenance of city streets whereas 90 per cent of the motor traffic is on the park boulevards.



Brief Business Announcements



Orange, Cal.—Work has been commenced on the erection of a new building for the Orange garage.

Humboldt, Tenn.—I. H. Dungan is organizing a company to run a motor bus line from this town to Dyersburg.

Hightstown, N. J.—O. T. Fenton and D. B. Dey have formed a partnership, and will represent the Chalmers-Detroit in this town.

Boston, Mass.—The Taxi-Service Co. of this city, has been incorporated with a capital stock of \$120,000, and will do a general transportation business.

Los Angeles, Cal.—The Central Motor Car Company, which has the agency for the Auburn, has removed from 1158 South Main street to 1156 South Main.

Portland, Ore.—The Studebaker Brothers company has purchased the property at Alder and Chapman streets and will erect a three-story brick warehouse and garage.

Sacramento, Cal.—Ground has been broken at Twelfth and J streets for a new garage for the Capital Machine and Auto Co. The concern is now located at Seventh and L streets.

Harrisburg, Pa.—The Ideal Garage and Motor Car Co., a new concern, has opened an establishment at 906-908 Market street. George F. Snyder is to be the manager of the company, which will do general repair work, as well as storing cars.

Kansas City, Mo.—C. F. Ettwein has given up the active management of the Ettwein Motor Car Co., and will be succeeded by William McGee, who is a newcomer in this city. Mr. Ettwein still retains his stock in the concern.

Harrisburg, Pa.—Robert Morton, who has been acting as chief inspector and tester for the Pullman company, of York, will in the future be attached to the staff of the Keystone Motor Car Co., and will look after the interests of the Pullman car in this city.

Watertown, N. Y.—Within the coming year, a new industry is to locate in this town. Plans are being drawn by John W. Griffin for a new building for the H. H. Babcock Co. to be erected near the other buildings in Factory square, and the new structure will be devoted to the manufacture of gasoline engines and gears for motor cars.

Detroit, Mich.—The Fischer Body Co., a recently incorporated firm, has purchased the plant of the old Gier planing mill on St. Antoine street, and will commence operations at once. The new company has a capital stock of \$50,000, and will engage in the manufacture of motor car bodies, etc. Among those interested in the new concern are Albert, Charles and F. J.

Fischer and W. S. Webb. A two-story building, 230 by 50 feet, will be erected for use as a mill room and dry kiln.

Boston, Mass.—The Michelin Tire Co. of Massachusetts, of this city, has been incorporated with a capital stock of \$10,000.

Reno, Nev.—Jack Kernek and John Payne have formed a partnership, and will run a repair shop on North Virginia street.

Detroit, Mich.—The Bloomstrom Mfg. Co., of this city, which is the maker of the Gyroscope car, has increased its capital stock to \$500,000.

Detroit, Mich.—J. P. Schneider has leased the property at Woodward and Baggs streets, and work will be commenced at once on the erection of a garage.

Harrisburg, Pa.—C. C. Crispen, who for the past 5 years has been connected with the Central Pennsylvania Co., has severed his connection with that concern.

Philadelphia, Pa.—H. Oscar Brown, formerly the local agent for the American Locomotive Motor Car Co., is now connected with the Bergdoll Motor Car Co.

Harrisburg, Pa.—A new company has been formed to represent the Studebaker car in this city. It will have its headquarters in the old garage of the Capital City Auto Co. on Market street.

Houston, Tex.—The Southern Motor Car Co. has purchased the lease, machinery, tools, garage and good will of the Empire State Motor Co., and in the future will be located in the garage of the latter concern, at Texas avenue and Caroline street.



Chicago—Straight-Roberts Auto Co., capital stock \$75,000, to manufacture motor cars and accessories.

Pittsfield, Mass.—Motor Transportation Co., capital stock \$50,000, to deal in motor cars, etc.

New York—Saratoga Auto Top and Body Co., capital stock \$15,000, to manufacture motor car tops and bodies.

New York—Moon Motor Car Co., capital stock \$5,000, to manufacture and hire out motor cars.

New York—Willis Cab and Auto Co., capital stock \$35,000, to deal in horses, manufacture and deal in carriages, motor cars, etc.

New York—Metropole Auto Garage Co., capital stock \$10,000, to operate garages.

Flushing, N. Y.—Queens Transit Co., capital stock of \$20,000, to maintain, repair and operate motor cars.

Kankakee, Ill.—Waldron Runabout Mfg. Co., capital stock \$50,000, to engage in the manufacture of motor cars and accessories.

Newark, N. J.—Eadie Vehicle Gear Co., capital stock \$300,000, to manufacture vehicles of all kinds.

Trenton, N. J.—Enterprise Automobile Co., of Hasbrouck Heights, capital stock \$100,000, to manufacture motor cars and engines of all kinds.

The company will use the lower floor for a garage, while the upper stories will be utilized for manufacturing purposes.

Boston, Mass.—T. E. Hamilton has opened a salesroom on Boylston street, and will deal in Havoline oils exclusively.

New York—The Hexter Taxicab Co. has leased the property at 249-251 West Sixty-fourth street, and will erect a four-story garage.

Pittsburg, Pa.—The Acme Motor Car Co. has opened new headquarters on Center avenue. O. B. Richards has been appointed manager of the concern.

Evansville, Ind.—Charles Sibley, of New Harmony, has plans under way for the establishment of a motor bus line from Mount Vernon to New Harmony.

San Francisco, Cal.—W. H. Halliwell, who has the agency in Los Angeles for the Warner Autometer Co., is making preparations to establish a branch in San Francisco.

Boston, Mass.—The Peerless company is preparing to enlarge its salesrooms by taking over the adjoining store, which was previously occupied by the Diamond Rubber Co.

Lansing, Mich.—The Grabowsky Power Wagon Co., of Detroit, has filed articles of incorporation with a capital stock of \$300,000, of which \$200,000 has been subscribed and \$180,000 paid in.

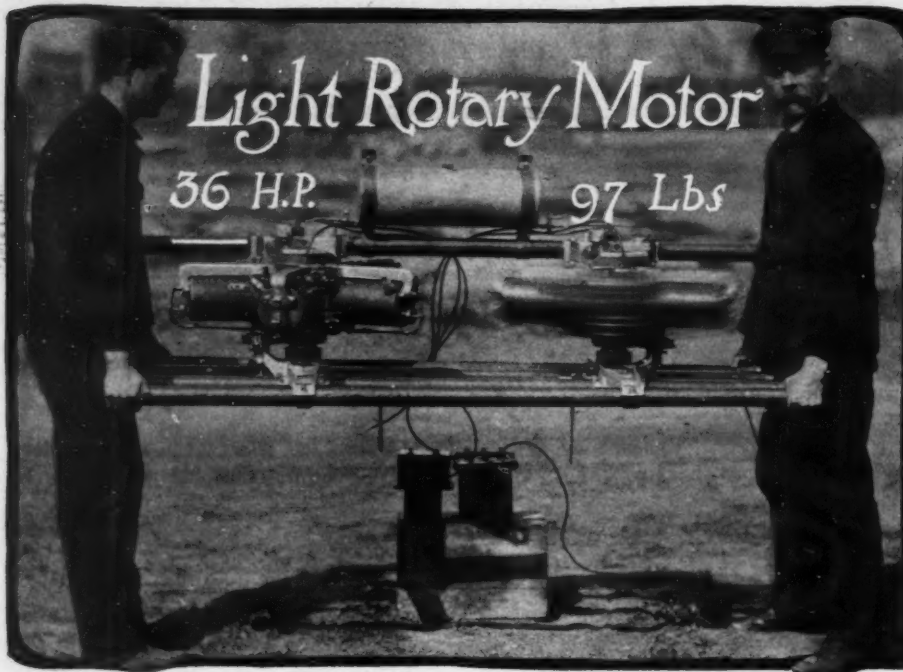
Buffalo, N. Y.—Charles Summey, who has been running a garage at 58 Gill alley, has filed a petition in bankruptcy with liabilities of \$1,936.44, and assets of \$100, which he claims to be exempt.

Harrisburg, Pa.—The Motor Vehicle Co., which has the agency in central Pennsylvania for the Jackson car, is remodeling and enlarging its garage. The salesrooms are to be enlarged, and a repair shop is to be added.

Providence, R. I.—John S. Harrington, who is the president of the Chalmers-Detroit Co. of Rhode Island, is about to open a salesroom for that company in this city. At the present time Mr. Harrington is located at 13 Dorrance street.

Pittsburg, Pa.—Application will be made on September 7 for a charter for a new corporation to be known as the Stearns Co., of Pittsburg, which will manufacture, buy, sell and repair motor vehicles of all kinds, as well as parts and accessories.

Albany, N. Y.—The Carnegie Hill Motor and Livery Co., of New York city, has been incorporated with a capital stock of \$9,900, and will run a motor livery. The Goodman Sales Co., also of New York city, has been incorporated with a capital stock of \$500.



DEMONSTRATING THE LIGHTNESS AND FREEDOM FROM VIBRATION OF ADAMS MOTOR

MOTOR AGE readers, who for several years have followed the evolution of the three and five-cylinder rotary gasoline motor manufactured by the Adams Co., Dubuque, Ia., will be interested in knowing that within the last year the energies of the company have in part been expended in the production of an exceedingly light five-cylinder motor with a rating of 36 horsepower and weighing only 97¼ pounds, which figures out at 2.7 pounds per horsepower. The cylinders have a bore of 4¼ inches and 3½-inch stroke, the design being to permit of a speed of 1800 revolutions per minute. While this particularly light-weight motor has been specially designed for aeronautic work, it has been evolved through improvements on the regular Adams motor employed in their car. In this motor, which is air-cooled, the usual cylinder flanges have been eliminated, and instead each cylinder, together with a fifth of the crankcase, is a one-piece steel casting of high tensile strength weighing but 7½ pounds, the five cylinders are bolted to an aluminum flange at the top which serves to form the intake manifold, this flange weighing 3 pounds, and the bottom of the five cylinders bolt to a steel flange which supports the single cam for operating the ten valves as well as the transmission gearset. As already known the crankshaft in this motor has but a single throw and remains stationary while the five cylinders rotate around it, forming the flywheel. The crankshaft weighs but 4½ pounds and has end bearings 1¾ inches in diameter by 2¼ and 3⅝ inches long respectively, with a center bearing 1¾ by 4 inches. In each cylinder is a cast iron piston weighing 2½ pounds, all five pistons being connected to the one crank throw by bronze connecting rods

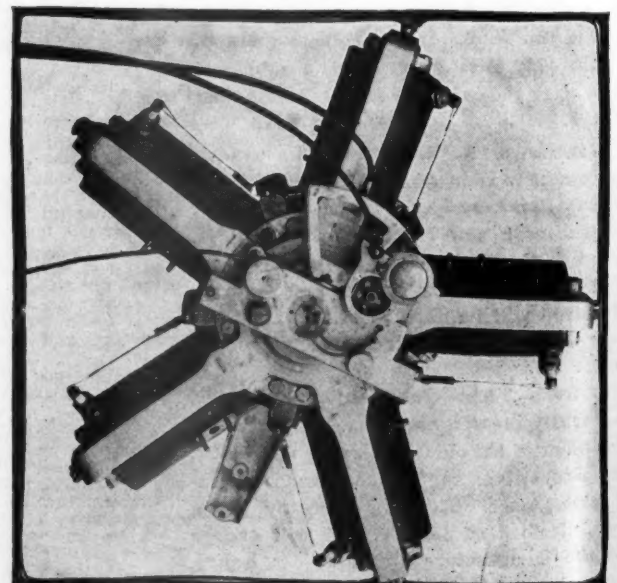
which interlock one another around the bronze steel-lined bushing about the crank-pin. All of the valves, ten in number, are opened by a single cam. They have no springs to close them; but being in the head of the rotating cylinders and closing outwardly, the centrifugal force due to the high speed of the motor is sufficient to properly close them. To facilitate starting, the compression is relieved, which allows of the motor rotating very slowly. For controlling the motor speed a variable compression system is used in which the intake valve is held open during any part of the compression stroke, thus permitting a fraction of the explosive mixture being forced out of the cylinder and conducted into the next in order to fire. Once the motor is started, the spark lever is permanently set and all variations in speed are through the variable compression system. The ignition system of the car remains practically as heretofore, employing a spark plug in each cylinder, one spark coil, one timer contact and one primary and secondary wire. This system is practically as simple as any single-cylinder engine, it is declared.

The freedom from vibration of this new motor is well shown in one of the illustrations in which two men are shown holding a pair of motors on a bed composed of parallel tubings; one motor is rotating at full speed, while the other remains stationary. Not the least interesting phase of this new motor is the ab-

sence of cooling flanges of any nature, this being the first time makers have attempted to eliminate this feature of air-cooled engines. During the summer of 1907 the company experimented with a seven-passenger motor car provided with a five-cylinder motor with 5 by 5-inch plain cylinders, the object of the construction being to determine the cooling qualities of flangeless cylinders. The result was highly successful, the motor not heating on long, steep hills or continued runs in deep sand. The initiated will realize that there is no flywheel, no exhaust manifold or muffler, no cooling device of any nature and that the rotation of the cylinders in flywheel form should give a particularly gyroscopic action that can be utilized to a great extent in airship work for maintaining the equilibrium of the airship. In motor cars this should add materially to their stability, it is asserted.

McADAMITE—A NEW ALLOY

McAdamite is a new aluminum alloy, which, roughly speaking, is two to four times stronger than and very much lighter than the ordinary brasses in general use in motor car construction at the present time. The strength of McAdamite has been demonstrated by screwing into a bar of it a ½-inch steel bolt under the head of which were placed enough washers to allow the steel bolt to enter the McAdamite bar to but three threads. When the bolt was tightened up to the washer additional turning broke it off without affecting the threads in the bar of McAdamite. It is claimed by the National Sales Corporation of New York, which handles this product, that it is particularly adapted for crankcase, gearbox, rear axle, differential and other motor car castings, it being claimed to be one of the strongest metals where lightness is a factor to be considered. The concern already has brought the new alloy to the attention of the trade in this country.



GENERAL VIEW OF ADAMS 97-POUND 36-HORSE POWER MOTOR